

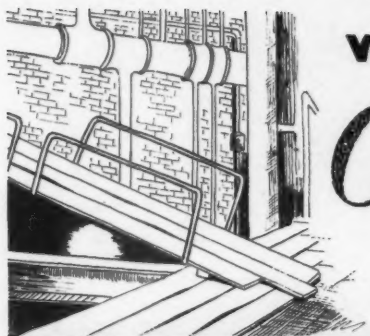
PACIFIC PULP & PAPER ♦ INDUSTRY

OCTOBER 1937



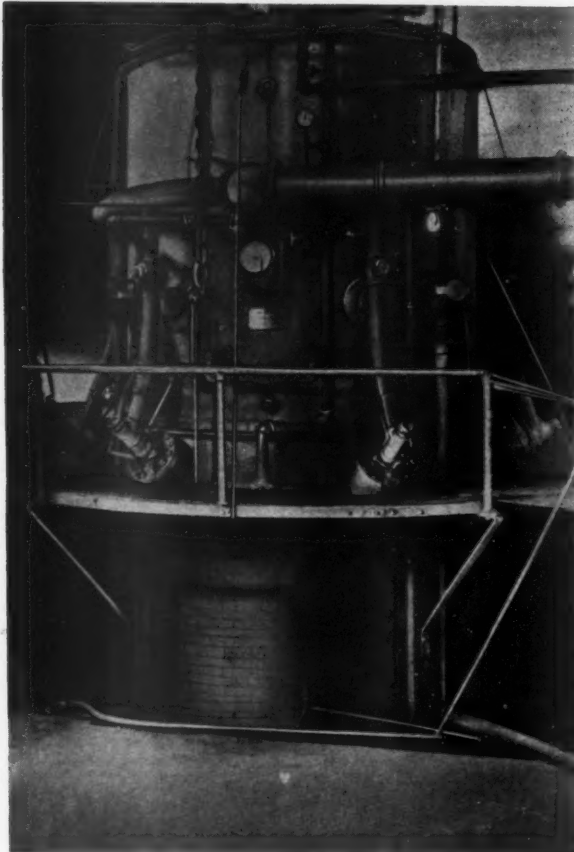
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NUMBER 10
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Compared from practically every angle of the operating expense of old type refractory units, the modern, efficient Ross-Hooper Smelter Body effects substantial savings. Here are a few of its major operating economies and advantages:

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PACIFIC PULP & PAPER INDUSTRY

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No. 10

CANADIAN OPINION REGARDS NEWSPRINT PRICE INCREASE ESSENTIAL

Although one important mill, St. Lawrence Corporation, has made a new deal for sufficient tonnage to keep its Three Rivers, Quebec, plant operating at capacity for the next two years, there have been no definite developments indicating a new price set-up among eastern Canadian newsprint mills. The St. Lawrence Corporation program was regarded as significant, however.

Certain concessions are believed to have been made in price, but operators are certain that no mill would tie itself up to contracts at this time without realizing some monetary advantage over the existing standard price of \$40 a ton New York and Chicago delivery.

St. Lawrence Corporation's action is believed to have been dictated by uncertainty as to how it would fare under the proposed pooling of tonnage which some of the larger eastern Canadian mills have been considering. It represents the first move by an "independent" producer to set its house in order.

Pool Agreement Expired

The major producing companies had hoped to bring about some kind of agreement that would result in the allocation of about 50,000 tons of newsprint to the less fortunate mills in an effort to keep them from breaking down the price structure through independent concessions. Such an allotment was actually made, but the pool arrangement ex-

Action of St. Lawrence Paper Company in negotiating a new deal for tonnage may bring interference from the Quebec government, it was intimated by Premier A. L. Taschereau, who said the province could not tolerate "such complete disregard of public interest". He said that no company could be permitted to enter into long contracts at this time "at the existing ruinous level."

Mr. Taschereau said that his government had been co-operating with the industry in its distress by giving special reductions in stumpage rates and other concessions, but if any company so ignored the common good the government would withdraw all aid from such company and take all measures necessary to protect the interests of the province.

Leaders of the newsprint industry in Quebec announced significantly that a price increase to \$45 a ton would mean a distribution of \$10,000,000 in Quebec province alone.

pired at the beginning of this month (October). Producers delayed formation of a new pool to operate during the new contract period of 1935. Some of the independents let matters ride, but St. Law-

rence went out and sought its own deal, Hearst being reported as one of the chief new customers.

General feeling in the industry is that the companies "long" in tonnage must allocate some of their orders to the "short" mills in order to prevent price breaks, but so far there has been no tendency to volunteer such concessions, which would have to be made by such companies as Powell River Company and Pacific Mills on this coast; Canadian International, Mersey, Anglo-Canadian, Lake St. John, E. B. Eddy & Co. in the East.

Among the so-called "short" companies that would have to be taken care of are: Consolidated, Abitibi and Price Bros. Naturally there are objections to such a program as proposed. No mill is going to cheerfully surrender business to which it feels entitled in these times.

It is reported in some quarters that if matters get further out of hand pressure may be brought to bear on the United States code authority to restrict imports from Canadian manufacturers violating price agreements.

In view of all these complications a general price increase before next year is not generally anticipated.

British Columbia Opinion

British Columbia newsprint manufacturers are hopeful of an early increase in price in view of the steadily increasing cost of production. Even though their mills have

not suffered to the same extent as mills in Eastern Canada, they contend that operation at present price levels for an indefinite period is out of the question.

Production Cost Rising

Over the past twelve months the cost of producing a ton of paper in Canadian mills has increased by nearly \$3 a ton. Wages and labor costs have increased this year all along the line, partly to conform with the somewhat severe code regulations under the National Recovery Act in the United States. At the same time the British Columbia and other provincial governments have compelled manufacturers to pay higher wages, especially to workers in the woods. The increase in labor costs so far is said to amount to about one dollar per ton of newsprint produced.

Wood Reserves Depleted

Had it not been for the low cost of wood many of the Canadian mills could not have carried on during the past two years. While "eating out of the woodpile" has been an effective way of keeping down costs to a minimum, it was only postponing the day when wood costs would rebound to their real level. This situation was not so pronounced on the west coast as in the east, for most of the big operators have their own woods crews and their supply of pulpwood from independent loggers has at all times been ample. However, the rise in labor costs has been an important factor with the British Columbia mills and woodpulp prices have reacted accordingly.

Exchange Increases Loss

It is estimated that wood and labor costs added at least seven percent to the cost of manufacturing newsprint in Canada during the last two years. In addition, the cost of chemicals and other required materials has advanced steadily. Producers in Canada have had another "loss" to contend with, too, in the conversion of American dollars into Canadian funds. The exchange situation spelled happiness for the Canadian mills while the American dollar was at a premium, but lately it has been just the opposite, with Canadians losing from fifty cents to a dollar a ton due to the discount of American funds. This is a serious loss when it is considered that about three-quarters of the Canadian newsprint output is marketed in the United States. Unfortunately

for the manufacturers seeking an increase in price, however, it cannot very well be used as an argument in view of the fact that American publishers were not able to take advantage of the exchange situation when it favored the United States. Contracts bound them to pay in American funds.

Apart from the publisher, who naturally opposes an increase in his costs, the majority of Canadian newsprint producers must regard as their opposition a group from their own ranks—the operators who are "short" of tonnage. With an excess of productive facilities, it is apparent that the majority cannot advance prices if the "shorts" are only too willing to keep on supplying paper at the old price in order to build up their volume.

Relief by Allocation

The most effective means of combatting this situation is believed to lie in a program of securing the co-operation of the "shorts" by allocating them tonnage at the expense of those who are "long". Given a greater volume of tonnage it is believed that the "shorts" would play along with the others in a united move for higher prices. When a pooling arrangement was made last fall the International Paper Company underwrote the tonnage and received very little support from other mills. A greater degree of co-operation will be necessary if the industry is to achieve its objective of higher prices for its product.

Woods Operations Not Financed

It is pointed out by executives of Pacific Coast mills that unless some agreement is made very shortly for a higher price the Canadian banks will not finance Eastern Canadian woods operations this fall, and that is a very serious matter for the eastern mills. This is the season when the wood must be taken out, if at all, and present stocks are nearing depletion. If the operations are not financed, the mills will reach the exhaustion point next spring or summer and the mills will be compelled to "fold up". Drastically increased prices would then be inevitable, and the consumers would suffer.

EXPECT PRICE CHANGE

S. D. Brooks, president, and A. E. McMaster, vice-president and general manager, Powell River Company, will return from their trip to the east early in November, and it is probable that after their conferences with executives of the industry in eastern Canada and the United

States they will be in a position to clarify the price situation to some extent, although the general feeling at present is that no change is likely to come before the turn of the year.

About December 1 the new equipment installed at the Powell River Company's mills at substantial cost to improve the quality of newsprint production will go into operation. A large crew is now at work getting the new equipment ready. The daily capacity will not be altered.

BRITISH COLUMBIA PULP-WOOD DEMAND INCREASES

So great has been the demand for pulpwood on the Queen Charlotte Islands this year that a new production record will probably be set, according to John R. Morgan, logging contractor, who has been taking out timber for Powell River Company and Pacific Mills, Ltd., big British Columbia newsprint operators.

"There hasn't been anything like it since the war days when the Imperial Munitions Board was combing the Northwest forests for airplane spruce," said Mr. Morgan. "Next year production will probably be double this year's, at the present rate of cutting."

More logs were taken from the Queen Charlottes than from the entire mainland section from Prince Rupert north to Alaska, according to Mr. Morgan.

Having cleaned up most of the timber at Crescent Inlet, the Morgan camps will be shifted to Sedgewick Island this month, Morgan alone will employ more than 200 men in the woods. The Allison Logging Company, operating at Cumshewa Inlet, and the Kelley Logging Company, running a camp at Atlin Inlet, will also be doubling their crews next year. The Kelley company has opened a new camp at Sewell Inlet, about twenty miles from Atlin. The three companies will probably provide employment for about 600 men shortly after the turn of the year.

MCGREGOR JOINS PULP DIVISION OF WEYERHAEUSER

George H. McGregor, formerly instructor in pulp technology at the Institute of Paper Chemistry at Appleton, Wisconsin, recently resigned to join the staff of the Weyerhaeuser Timber Company, Pulp Division, September 1st.

Mr. McGregor's duties will be in the technical control department of the pulp mill.

SITKA SPRUCE SUIT HEARD BY SUPREME COURT

What appears to be the final round of the legal fight over the property of the Sitka Spruce Pulp & Paper Company pulp mill at Empire, Oregon, was held September 19th before the Supreme Court of the State of Oregon at Salem.

Fourteen lawyers appeared to represent the various interests involved. Up to the time of going to press the court had not rendered its decision.

The present action dates back to last March when Circuit Court Judge T. Brand ruled that the property had been legally purchased, without power of redemption, by the major creditors, who in turn had arranged to sell the mill to the International Wood & Sulphite Company of Seattle.

Attorneys for R. T. Bournes, receiver of the Sitka Spruce property, claimed that the appellants had no judgment liens and therefore no right of redemption because their

judgments were acquired after the receiver took possession of the property.

Attorneys for the appellants, the Anglo-California National Bank, the Fidelity Warehouse Corporation, and the Home Mortgage Company, known as the Dollar and Fleischhacker interests who built the mill, allege that in the administration of the assets of a debtor under receivership, no creditor can obtain any preference by lien.

Coos County intervened urging that the mill property be immediately sold for taxes amounting to about \$29,000.

If the sale approved by the Circuit Court is affirmed by the Supreme Court the sale to the International Wood & Sulphite Company will be consummated and the mill rebuilt for early operation. If the original owners win their argument it is not known what they will do as the next step.

OLYMPIC FOREST PRODUCTS EARNS PROFIT

The general improvement in evidence in the pulp industry is reflected in the report of the Olympic Forest Products Company of Port Angeles, Washington, for the fiscal year ending April 30th, 1934. A net profit of \$205,214 is shown as compared with a loss of \$385,906 for the preceding year.

The earnings are equivalent to \$5.13 per share on the 39,997 shares of \$8 preference stock outstanding.

Sales for the fiscal year totalled \$2,627,649.51. Net income from operations was \$616,228.55. A net operating profit of \$288,115.30 remained after deducting depreciation of \$234,971.01 and interest of \$93,142.

Profit on bonds purchased for retirement amounted to \$6,393.84. Net loss on disposition of capital assets was \$52,616.56. Provision for Federal income tax was \$36,678.11.

In his letter to stockholders, President E. M. Mills reports that total current assets are \$837,845.26 as against total current liabilities of \$387,385.92. Bonded indebtedness has been reduced \$87,000 to \$1,163,000.

Mr. Mills states, "Experiments in the development of special pulps mentioned in our last report, have been continued under the direction of the technical staff of the Rainier

Pulp & Paper Company and have resulted in the company being able to produce commercially a type of pulp used in the manufacture of rayon and other cellulose products. A long term contract has been entered into with Rainier Pulp & Paper Company which should assure the production and sale of a large volume of this type of pulp at a realization to the company above that which could reasonably be expected from the production and sale of ordinary grades of pulp."

According to the last federal census, Washington had 86,897 workers employed in forest industries; Oregon had 52,171. Prior to 1930 the lumber industry brought approximately \$250,000,000 per year into these two states.

BIG GAIN IN WASHINGTON'S PULP AND PAPER PAYROLL

Remarkable increase in the payroll of Washington's pulp and paper industry for the first six months of 1934 over the same period in 1933, is shown in the report just issued by E. Pat Kelly, director of the Washington state department of labor and industries.

The industry's payrolls gained

CROWN-ZELLERBACH DOUBLES DIVIDEND

As a result of increased profits, Crown-Zellerbach Corporation announced in October that on December 1 it would double its quarterly dividend from 37½¢ to 75¢ on its "preference" A and B stocks, of which there are 250,601 shares outstanding. In normal times, this stock pays a dividend of \$6.00 per year. Its actual earnings for the period were \$1.07 per share.

SECURES GOVERNMENT LOAN

The International Pacific Pulp & Paper Co., Portland, Ore., has secured a loan of \$60,750 from the Reconstruction Finance Corporation. Fred A. Douy is president and manager of this company, which formerly was known as the Multnomah Lumber & Box Co. The company has erected a spruce sawmill at Kernsville on the Oregon coast, which it is operating in addition to the sawmill in Portland. When the new sawmill is fully broken in it is the intention of the company to erect a board mill, probably in Portland, and to engage in the manufacture of board containers. The plan contemplates a single machine board mill and Sitka spruce and hemlock will be utilized from the company's own operations.

INLAND EMPIRE NEWSPAPERS BACK NEWSPRINT TARIFF

The Libby, Montana, Western News, the Bonners Ferry, Idaho, Herald, and the Moscow, Idaho, News-Review have recently published editorials commenting upon the expected fight in the forthcoming session of Congress for a tariff on newsprint, and urging that their readers support the fight.

All three papers are advocating the establishment of a newsprint mill in Northwestern Montana to utilize that region's timber in the manufacture of newsprint paper for local and nearby consumption.

61.3 per cent, or \$1,397,423 in the first half of 1934 as compared to the first half of 1933. The six months total for this year is \$3,673,622 and for 1933 the six months total was \$2,276,199.

As this gain was made prior to the wage increase of August 1st, it almost entirely represents additional employment in the mills.

RAINIER SETTLES OYSTER PROBLEM

Permanent settlement of the long drawn out controversy between the growers on Oakland Bay and the Rainier Pulp & Paper Company, appears to have been reached by the leasing of the beds to the pulp company effective May 1st, 1935. The agreement is satisfactory to all concerned, the pulp company, the growers and the community of Shelton where the mill is located.

Five oyster growers signed the leases. Two others had previously leased their beds to the pulp company. Only one grower on Oakland Bay, G. Yoshihara, did not participate, being satisfied with the progress his oysters are making. However, Yoshihara's minor children obtained a settlement through their guardian of \$9,900, releasing all claims against the pulp company up to may 1st, 1934.

The leases are for a fixed period of five years with three possible extensions of three years each, the owners retaining the right to take back the lands after five years on giving notice, with the improvements and oysters thereon and upon executing a perpetual release to the company from all obligations or claims for damages past or future.

Damages are to be paid by the Rainier company amounting to \$60,000 representing all damages to the oyster beds alleged to have been made through waste liquor since the settlement of June 21, 1931, when the citizens of Shelton and outside friends paid to the oystermen \$166,000 to settle pending heavy damage suits and keep the pulp mill in Shelton. The settlement of \$60,000 will

be prorated among the growers signing the present leases.

The pulp company takes immediate possession of the beds and begins paying rentals May 1st, 1935. These will be in excess of \$1,000 per month and will be prorated upon the 1931 settlement basis. The largest single recipient will receive slightly in excess of \$200 per month.

The company agrees to expend not less than \$1,000 per year on the largest grounds and proportionate sums on the others in an attempt to bring back into full production the native Olympia oysters. If the lands do not prove productive in the experimental program the company has a three-way plan for protection according to the leases.

First: The mill is empowered to purchase the oyster lands outright at a reasonable figure.

Second: The pulp mill can renew the leases on the same terms.

Third: If the development program proves unsuccessful the pulp mill can increase its rental payments.

Previous beds leased last spring are already showing a satisfactory growth of young Olympia oysters according to those in charge. The leases include Olympia oysters only and do not include Japanese oysters now being raised by some growers.

The construction of evaporating towers at the Rainier plant continues and will probably be concluded by the first of the year. Trials on a small scale indicate the entire amount of waste liquor will eventually be evaporated to a consistency permitting its burning for the production of steam, thus eliminating all possibility of water pollution.

POWELL RIVER EXECUTIVE CHANGES

Departure of William Barclay, sales manager, on a tour of the Orient has brought about several temporary shifts in the Powell River Company's office staff at Vancouver, B. C.

R. C. McKenzie, production manager at Powell River, is being brought down to act as sales manager, while his office at the mill will be filled by D. A. Armour.

Mr. Barclay's office is being subdivided as between sales and finance, the latter having been one of Mr. Barclay's duties. R. W. Foote, Mr. Barclay's permanent assistant, has been appointed acting assistant treasurer.

BOY. PAGE PAUL BUNYAN

Prior to the big social event the Mason County Journal of Shelton, Wash., published the following illuminating story of what might be expected to happen.

"After licking their chops in anticipation for three months, the Rainier Pulp & Paper Company golfers will at last sink their fangs into the turkey dinner they won in their annual links match with the L. M. grocers last June, when the merchants pay for the family style feed at the Hotel Shelton Friday night.

"Although the L. M. clubbers pay for the meal, they claim they'll eat most of the dinner, despite the reputations of Ferdie Schmitz and Mort Beach."

CAMAS PAYROLL INCREASES

The Payroll of the Camas mill of the Crown-Willamette Paper Company has increased approximately \$12,000 monthly as a result of the wage agreement entered into early in August.

RALPH SHAFFER GOES EAST

Mr. Ralph Shaffer, president of the Shaffer Pulp Company, Tacoma, Washington, left on an extended Eastern trip October 8th. Mr. Shaffer will call on the paper mills in the Middle West and East.

NEW TYPE OF NOTEBOOK

The Li-Rite Corporation has been formed with George Grinnell as president and is manufacturing in its own building at Everett, Washington, spiral spring bound note books from stock made by the Everett Pulp & Paper Company.

The advantage of this type note book is that the pages all lie flat, due to the loose leaf construction. A machine has been developed for automatically inserting the spiral wire coil which acts as the binder.

Mr. Grinnell was formerly manager of the Western Paper Converting Company at Salem, Oregon.

EVERETT HOLDS SALES MEETING

The annual sales meeting of the Everett Pulp & Paper Company was held October 15th to 17th inclusive at the company's plant in Everett under the direction of J. L. Murray, sales manager. Mr. J. T. Pope who is in charge of the San Francisco sales office and Mr. A. A. Ernst, manager of the Los Angeles sales office came north for the meeting. Harvey Stewart and Jerry Lecuyer, northwestern salesmen, also attended the meeting.

ACID SYSTEM STARTS

The new Jenssen high pressure acid system was successfully started up at the sulphite mill of the Soundview Pulp Company at Everett, Washington, on October 15th.

EVERETT OFFICIALS GO EAST

Mr. W. J. Pilz, manager, and Mrs. Pilz left for New York October 16th and Mr. J. L. Murray, sales manager, and Mrs. Murray left on the 19th. Mr. Pilz and Mr. Murray will attend the annual meeting of the association of Paper, Stationery and Tablet Manufacturers in New York and also the meetings of the code authority for this branch of the industry. Mr. Murray is a member of the code authority.

COAST SUPERINTENDENTS TO MEET DECEMBER 7th and 8th

The Pacific Coast Division of the American Pulp & Paper Mill Superintendent's Association will hold its third meeting December 7th and 8th at the Hotel Winthrop in Tacoma.

Members are asked to arrive by noon Friday, December 7th, to spend the afternoon playing golf, weather permitting. If golf is called off on account of rain the informal making of pulp and paper will be in order for the afternoon. In the evening a reception will be held at the hotel.

Both the morning and afternoon of Saturday, December 8th, will be taken up with business meetings, including the reading of papers and the election of officers for 1935. Word has just been received that Fred Boyce, the "father" of the Superintendent's Association, will come West to attend the meeting. Almost every superintendent knows Fred Boyce and will want to see and talk with him again.

Entertainment and dancing will feature the banquet to be held at the Hotel Winthrop Saturday evening.

Mr. Fred Shaneman of Tacoma is

in charge of arrangements for the meeting and Mrs. Shaneman will arrange a program for the ladies that will keep them having a good time every minute of the two days.

Reservations should be addressed to Fred Shaneman, Pennsylvania Salt Manufacturing Company of Washington, Tacoma, Washington.

A number of manufacturers of equipment and supplies will have exhibits in the hotel lobby.

Indications point to a larger attendance at the third meeting of the Coast Division than at either of the previous gatherings. Chairman H. Robert Heuer says that the program will be highly interesting and instructive, and urges all superintendents and their friends to attend. The officers have selected Olympia as the meeting place because of its central location. It is only a short drive from all Puget Sound and Columbia River mills.

Officers of the Pacific Coast Division are: H. Robert Heuer, chairman; G. J. Armbruster, first vice-chairman; Ferdinand Schmitz, Jr., second vice-chairman; H. C. Reimer, third vice-chairman; H. A. Des Marais, secretary-treasurer.

NEW WALLBOARD ANNOUNCED

Combining the strength and rigidity of Douglas fir plywood with the insulating and acoustical qualities of Fir-Tex, a new board, Du-X, is being offered the building trades by the Du-X Corporation of Portland. For several years experiments have been carried forward to develop a combination plywood and insulating board, Fir-Tex being used in all cases and plywood from various plants being tested. The major problem has been to cement plywood to the insulating material in such a way that the necessary additional compression does not materially reduce the insulating qualities of the combined product. In Du-X the manufacturers feel that they have accomplished the objective.

The Du-X Corporation was formed to handle the sale of the product. Officers of the company are: President, Robert E. Dant, of Dant

& Russell, Portland; vice president, E. W. Borcharding, of the Westwood Lumber & Veneer Co., Chicago; secretary, Albert Ridgway, Portland. The Westwood Lumber & Veneer Company for several years has been closely associated with Dant & Russell in the sale of Port Orford cedar separators and veneer. Eastern sales will be largely handled by that firm.

The Du-X Corporation purchases its insulating material from the Fir-Tex Insulating Board Co., St. Helens, Ore., and its Douglas fir plywood from the Vancouver Plywood & Veneer Co., Vancouver, Wash. The manufacturing process is completed in the plant of the Vancouver Plywood & Veneer Co. Plywood is cemented to one face of the insulating sheet. It is expected that this material will largely find a market as interior wall panelling. The plywood face may be either on the outside, or against the studs.

COALS TO NEWCASTLE

Thirteen thousand rolls, approximately 1,040 tons, of Newfoundland newsprint were unloaded in Seattle and Tacoma the middle of October from the Norwegian motorship Brynje, consigned to local newspapers who obtain their entire income from the Pacific Northwest where the newsprint mills are short of business and unable to keep their men fully employed. This was a regular periodic shipment.

At the present price of \$41 per ton for newsprint, this shipment of foreign paper displaces about \$42,640 worth of Pacific Northwest newsprint, and at the same time took that much money to Newfoundland which otherwise would have been distributed into the trade channels of Washington and Oregon.

Additional newsprint was unloaded at California ports making the total newsprint production lost to Pacific Coast mills ever larger. The total tonnage discharged in California is not available.

WELSH COMMENTS ON NEWSPRINT SITUATION

William D. Welsh, editor of the Port Angeles (Washington) Evening News speaks up for the American newsprint industry in the following editorial:

The Seattle or Tacoma store advertising in any newspaper buying its newsprint from Newfoundland, Quebec or Sweden aids and abets in the banishing from Washington state countless thousands of American dollars that never will return. The Seattle or Tacoma store advertising in any newspaper buying its newsprint from Pacific Northwest mills stand a chance of getting its dollars back within twenty-four hours. Isn't it about time the foreign-buying press of the two large upsound cities woke up and helped this part of the country with dollars instead of advice and editorials? The dollar spent in Newfoundland goes to some foreign worker who gets only 18 cents to 22 cents an hour, and to Norwegian sailors on whose vessels the paper is transported to Seattle or Tacoma. At 18 cents an hour the Newfoundland worker has about as much chance of buying something in Seattle as he has of selling an electric refrigerator to a Siberian convict. At 47 cents an hour for the lowest paid man, the Port Angeles paper mill workers' dollar reaches Seattle or Tacoma in the same week.

WESTMINSTER EARNINGS IMPROVE

Although prices continued at a low level and costs of raw materials increased, Westminster Paper Company, operating mills at New Westminster, B. C., showed improvement in earnings during the year ended July 31, 1934, according to President J. J. Herb. Increase in sales and manufacturing economies were the factor that enabled the company to make such a satisfactory showing, Mr. Herb informed Pacific Pulp & Paper Industry. The general indications, he says, are that business will gradually improve; that the worst is definitely past.

Westminster Paper Company, manufacturing a wide variety of specialties, tissues, wrapping papers, etc., has enjoyed a fairly substantial participation in export markets. For years the company has sold its products in Australasia and on the Canadian prairies, as well as in other markets.

Mr. Herb's financial statement shows profit before depreciation, bond interest and income taxes at \$91,487 compared with \$77,939 for the previous year. After depreciation allowance of \$35,311 compared with \$29,900 the previous year and \$12,500 for income taxes compared with \$8,000, there remained \$43,676 available for bond interest of \$17,989.

Bond interest was thus earned nearly two and a half times after all charges, or over four times after income taxes but before depreciation. The previous year there was approximately \$40,000 available for bond interest of \$18,460, indicating that interest charges were covered about two and a quarter times in that year. In the year ended July 31 last there was a surplus of \$25,687 after all charges, compared with \$21,579 the previous year. The usual 4 percent dividend on the common stock was paid, amounting to \$19,116 so that the balance sheet showed an addition to surplus account for the year of \$6,572. The previous year after common dividends there was a net addition to surplus account of \$643 after taking care of \$1,850 in income tax relating to a prior year.

Surplus account at July 31 last stood at \$30,189 compared with \$23,517 the previous year.

At the annual meeting a motion to pay a 4 percent cash dividend, to be paid in two installments of 2 percent each, the first on November 1 and the other on May 1, was carried.

The following directors were elected: J. J. Herb, S. A. Lake, J. G. Robson, H. M. Lord, Fred Smith, Knox Walkem, F. J. Hume, Francis Wright and John Peck.

The balance sheet shows current and working assets of \$190,467 compared with \$169,003 a year ago. Inventories at cost or market, whichever is lower, were shown at \$9,945 compared with \$80,328; bills and accounts receivable less reserve at \$69,952; cash surrender value life insurance policy, \$16,272, compared with \$15,000; accrued interest on investments was the same at \$2,044 and cash at \$9,649 compared with \$3,678.

Current liabilities were shown at \$74,620 compared with \$59,885, indicating net working capital of \$115,847 compared with \$109,118.

Capital assets amounted to \$654,914 compared with \$666,082, the change being brought about by a larger allowance for depreciation, more than offsetting additions during the year of \$23,741.

Patents and trademarks were carried at the same value as previously—\$75,132. Investments were also unchanged during the year at \$107,375 consisting of 6½ percent first mortgage bonds of Pacific Coast Paper Mills to the amount of \$100,000, 20,045 shares in the same company at \$6,275 and \$1,100 sundry investments.

Debentures and cash in the hands of the trustee for 6½ percent first mortgage debenture on Westminster Paper was \$29,545 compared with \$16,846 a year previously. Deferred charges of \$793 brought total assets to \$983,095 compared with \$960,536 a year ago.

First mortgage debenture due April 1, 1950, and carrying 6½ percent interest are outstanding to the amount of \$200,000.

Forest roads built by members of the CCC in Oregon and Washington, if stretched in single line from the Pacific Coast, would reach across the continent and back—almost to Chicago.

PARKS GIVEN DINNER

Tom Parks, who recently resigned as chief engineer of the Hawley Pulp & Paper Company, Oregon City, Oregon, was given a surprise dinner by about sixty of his friends at the West Linn Hotel in West Linn on the evening of October 5th.

In token of their friendship and esteem the guests presented Mr. Parks with a gold knife and chain, accompanied by a scroll upon which was written the names of those attending. Ray Smythe as toastmaster, made the presentation, remarking that, "We hope that with this knife you may cut yourself a large share of happiness and good luck, and that the chain symbolizes our attachment to you. Although we are already bound to you by chains of affection, this is further symbolical of our great esteem."

Lionel Malley sang several songs. Bill Kelly and Louis Smith played the violin and H. A. Des Marais the piano. The entire company joined in the singing of old songs. Ed Norton, chief electrical engineer at the Hawley mill was in charge of arrangements for the dinner and was assisted by Lionel Malley and Henry Reimer.

PEPPELLE GOES TO SEA

L. C. Peppelle, treasurer of the Puget Sound Pulp & Timber Company, Clear Lake, Washington, is also a lieutenant in the Supply Corps U. S. Naval Reserve.

On October 15 Mr. Peppelle put aside his books and adding machines for two weeks and joined the flagship Pennsylvania at Seattle for a trip southward to San Francisco and San Pedro. This may turn out to be a "postman's vacation", for it is rumored that the Supply Corps is held responsible for counting the number of beans consumed by the Navy.

RAU HEADS SAVINGS INSTITUTION

Irving T. Rau, secretary-treasurer of the St. Helens Pulp & Paper Company, St. Helens, Oregon, has been elected president of the recently organized Federal Savings & Loan Association of St. Helens.

ANTIOCH MILL TO PUBLISH HOUSE ORGAN

The Antioch, California mill of Fibreboard Products, Inc., will issue the first edition of its new house organ on November 1st under the editorship of Harry A. Hobbs. The publication will appear monthly.

MURALS IN NEW LIBRARY SHOW EVERETT PAPER MILL

On the evening of October 3rd the new public library was dedicated at Everett, Washington, with appropriate ceremonies before a group of two hundred people. Dr. George T. Gunter, a member of the library board read an eulogy of the late Leonard Howarth, whose \$75,000 bequest made possible the building of the new library.

Mr. Howarth, a brother of William Howarth, president of the Everett Pulp & Paper Company, was one of the organizers of the paper mill in Everett in 1902. The eulogy read at the dedication ceremony was based upon incidents in Leonard Howarth's eventful life, and furnished Dr. Gunter by William Howarth.

Upon his death in 1930, Leonard Howarth bequeathed \$75,000 to the city of Everett to be used for the benefit of the city at the discretion of his executors. A committee was appointed to investigate the possible ways the money could be used in the interest of Everett, and decided after much consideration that a new public library would benefit the greatest number of residents of the city.

In designing the new library, which is of modern architecture, the committee in charge, together with the architects, Bebb & Gould of Seattle, decided it would be fitting to commemorate the pioneer history of Everett through the painting of three murals. The largest, about twenty-eight feet long and eight feet high, depicts the arrival of Captain Vancouver at the site of Everett and his taking the Puget Sound country in the name of England. Other historical events from 1792 to 1850 are shown on this mural.

The second mural, about eight by fourteen feet, deals with the history

of Everett beginning with 1892. The first industries are emphasized, the barge works, the sawmill, the nail works and the paper mill. The first through train from St. Paul in 1893 is pictured.

The third mural presents Everett as it is today with its industries including the modern mill of the Everett Pulp & Paper Company.

The three murals as well as a fresco painting were designed and executed by John T. Jacobsen, Seattle artist and architect. Mr. Jacobsen was assisted in the painting of the murals by Jane Brown Wyckoff, also a Seattle artist.

The mural depicting Everett as it was in 1892 is reproduced on this page.

BARCLAY TO DEVELOP ORIENT MARKET

Indicating its determination to make the most of its opportunities in the Oriental field, Powell River Company is sending William B. Barclay, sales manager, on a four months' tour of Japan, China and the Philippine Islands to investigate market possibilities and make a general study of trade conditions.

Mr. Barclay plans to leave Vancouver, B. C., on the Canadian Pacific liner Empress of Japan. This will be the first time that the company has sent one of its executives to the Orient since Robert Scanlon visited Japan about three years ago. Mr. Scanlon is now in charge of the company's office in San Francisco.

Powell River Company has developed during the past five or six years an exceedingly valuable business in the Orient, especially in Shanghai and Hongkong, but its officials believe that the field is almost inexhaustible in sales possibili-

ties. Increase in silver valuation has been of considerable benefit to Chinese buyers, and while all Powell River Company's transactions are in sterling the feeling is that now and during the next few years China will be in the market for an increasing tonnage of newsprint. Especially since the embargo on Japanese goods China has shown an inclination to place a larger percentage of its orders with Pacific Northwest mills and to rely less on the Japanese mills which at best were a badly handicapped competitor of mills in this part of the world owing to inferior quality and higher costs.

An interesting feature of Powell River Company's business with China has been the supplying of specially colored papers. Various colors have a special significance. Newsprint sent to some buyers, for instance, is stained red and used as "prayer papers". Some idea of the potentiality of the newsprint market may be gained from the fact that newsprint is used in China for many purposes which in this country would require finer grades. School books and many literary books use newsprint exclusively.

HAWLEY IMPROVING WOOD ROOM

Hawley Pulp & Paper Company, Oregon City, Ore., is reconditioning its wood room and making some improvements in the material handling system. Several of the chippers have been rebuilt and fitted with anti-friction bearings.

MERRILL VISITS COAST

Mr. A. D. Merrill of Watertown, New York, vice president of Chemipulp Processes Inc., visited Pacific Coast mills during the month of September, in company with A. H. Lundberg, of Seattle, Pacific Coast representative of Chemipulp Processes, Inc.



HAWLEY REORGANIZATION PLAN PROGRESSES

As a further step in the reorganization program of the Hawley Pulp & Paper Company, Oregon City, Ore., under provisions of the new corporate reorganization amendment to the national bankruptcy act, Federal Judge McNary of Portland, on October 2, gave formal approval to the plan submitted to the security holders of the company on March 15, 1934.

An order continuing the Hawley Pulp & Paper company in possession of all of its property was made by the court along with an order to the company to give notice to all creditors and stockholders of a hearing before the court on Monday, October 29, at 10 a. m., to consider advisability of continuing the company in possession.

Under the corporation reorganization amendment, enacted by congress June 7, 1934, provision is made that if 66⅔ per cent of any class of creditors agree to the plan of reorganization of that class of security, then the court may confirm the plan and compel the minority group to accept the plan. The petition of the Hawley Pulp & Paper Company sets forth that securities have been deposited with the depository under the plan as follows:

Six per cent first mortgage bonds due July 1, 1946, total issued and outstanding, \$2,127,500; total deposited, \$1,591,500; per cent deposited, 74 per cent.

Seven per cent notes due July 1, 1934, total issued and outstanding, \$500,000; total deposited, \$500,000; per cent deposited, 100 per cent.

First preferred \$7 cumulative no-par stock, total issued and outstanding, 20,000 shares; total deposited, 15,524⅓ shares; per cent deposited, 77 per cent.

Second preferred \$6 cumulative no-par stock, total issued and outstanding, 8000 shares; total deposited, 7487⅓ shares; per cent deposited, 93 per cent.

Common stock voting trust certificates, total common stock outstanding, 200,000 shares; voting trust certificates outstanding representing 200,000 shares; voting trust certificates deposited representing 174,378; amount deposited, 87 per cent.

Business of the Hawley Pulp & Paper Company has been conducted at a net yearly loss for the past three years and eight months, according to the company's formal petition. The company is in default since July 1, 1933, in payment of interest

on \$2,127,500 of 6 per cent first mortgage bonds issued July 1, 1926. It is also in default in complying with the sinking fund requirements to the extent of \$295,459.44, with the further sum of \$134,500 becoming due on July 1, 1935. A promissory note of July 1, 1929, for \$500,000 payable to Blyth & Co., Inc., was payable July 1, 1934, and interest on the note is due from January 1, 1933.

The plan of reorganization, which has been presented by the Hawley Pulp & Paper Company to the holders of its securities, was evolved by the following committee, appointed by the board of directors on July 30, 1933: Isaac D. Hunt and E. S. Collins, Portland; representing bondholders; W. Lair Thompson, Portland, representing note holder; A. S. Kerry, Seattle, representing stockholders, and Watson Eastman, Portland, representing management.

The \$2,127,500 issue of 6 per cent first mortgage bonds of July 1, 1926, provided funds with which the Hawley Pulp & Paper Company built a new structure at Oregon City and installed a newsprint paper machine, as well as for other features of an extensive building and improvement program, it is stated in information provided for security holders.

"Briefly summarized, the plan is devised to conserve the assets of the company and retain the priority of all securities as now existing. The plan provides for all available funds being disbursed to bondholders until the bonds are retired, except as provided hereafter," reads a statement of the Hawley Pulp & Paper Company.

"This will be accomplished by using annually the first \$279,404.48 (the 1932 depreciation charges) for the purchase of bonds after advertising for offers. Funds exceeding this amount (net earnings of the company) to be disbursed as interest to bondholders until 4 per cent per annum has been distributed. Funds above this amount to be used for the payment of interest on the note until 3 per cent per annum has been distributed. Funds above this requirement to be used for the purchase of bonds and the retirement of the note in the ratio of 81 per cent per value of bonds and 19 per cent par value of note, until \$1,000,000 par value of bonds shall have been retired, when such available funds shall be used, first, for the payment of bond interest; second, the payment of note interest, and third, for the purchase and retirement of bonds and note princi-

pal on a pro rata basis according to the par value of the outstanding bonds and unpaid par value of the note. After the retirement of bonds and note, dividends shall be paid on the first preferred stock and, upon the payment of all cumulative dividends thereon, the plan terminates."

The order, as given by the court, temporarily enjoins all persons from instituting any suit or prosecution of any kind against the company.

SOUNDVIEW HAS GOOD TWO MONTHS

According to President H. H. Fair, the Soundview Company of Everett, Washington produced 4,772 tons of sulphite pulp during August. Sales amounted to 4,634 tons. Inventory at the end of August was 3,440 tons which is carried at cost.

August operations resulted in a profit of \$18,290.13 after all charges including an approximated reserve for depreciation of \$20,000, contingency and other reserves of \$4,000 and capital stock tax of \$4,185 for the year ending June 30th, 1934, but before Federal taxes.

During September 4,479 tons of pulp were produced and 5,829 tons were sold, leaving on hand an inventory of 2,090 tons which is carried at cost.

September operations resulted in a profit of \$24,032.80 after all charges, including an approximate reserve of \$20,000 for depreciation, \$4,000 for contingency and other reserves, but before Federal taxes.

CANADIAN PULP EXPORTS GAIN

According to official figures issued by the Canadian Department of Trade and Commerce, total exportations of wood pulp of all classes mechanical and chemical, from the Dominion during the first eight months of the current year amounted to 395,473 net tons, valued at \$16,749,714. In the corresponding period of 1933 exports amounted to 378,644 net tons valued at \$14,544,836. 1934 exports increased 16,829 tons in the first eight months and the increased value was \$2,204,878.

Under a program of intensive forest management western Oregon and Washington can grow pulpwood timber fast enough to supply indefinitely the entire annual demand of the nation's pulp and paper industry.

ECONOMIC AND SAFETY FEATURES OF CUBICLE TYPE MOTOR CONTROL UNITS

By

E. H. VICARY* and K. L. HOWE†

Metal enclosed switchgear (1) and power switching apparatus (2) have been discussed before the annual New York meetings of the TAPPI. In these papers the subject of metal enclosed units has been treated from the standpoint of economy and safety with respect to power generation and distribution, particularly in the pulp and paper industry. Economics of manufacture and installation which have been proven for this type of construction can be realized more fully by extending the idea of group assembly of self-contained units to include motor control distribution center and starting units. The safety features assume major importance because of the greater number of men whose regular duties cause them to come in contact with the operation of the equipment.

This paper will deal with the design, application, and safety features of cubicle type motor control for squirrel cage, synchronous and wound rotor motors. Cubicle construction does not in any way limit the features of control design since all standard and special types of control are easily assembled in cubicle form. Excellent forms of standardized control equipment are available, but on the basis of apparatus cost only, proper consideration cannot be given to installation costs and circuit interrupting capacity, especially when a group of motors is involved. Motor cubicle control does not overlap the field of high capacity switchgear necessary for adequate feeder protection. This paper, therefore, begins at the feeder delivering power at motor voltage and is concluded with the installation of equipment within a single unit, that provides circuit protection as well as motor protection.

Since construction features and installation costs are of primary importance in gaining a correct solution to the entire problem, it is necessary that a brief review be given of the previous forms of motor starting equipment.

Beginning with a fused knife switch as the only form of motor control, little was accomplished toward control development because of the interest in the induction motor. As late as 1915 bulky manually operated devices and magnetic switches in generously proportioned enclosures were all that were available. About 1920 interest in control equipment resulted in the development of magnetic starters which were compact, much more reliable and with a greatly extended life. An analysis of the time-current curve of the motor indicated that a much greater portion of the thermal capacity could be safely developed using a thermal overload relay. The first real advance in motor control development was thus attained, resulting in extensive installations and individual motorization of machines.

For years, standard mill construction for 600-volt power distribution consisted of grouping standard starters, either wall mounted or assembled on a framework, above which a horizontal three-conductor copper bus was mounted within a completely enclosing sheet metal gutter box. Incoming power connection was made to this bus. Immediately below the bus gutter box, fuses and knife switches were located on the supporting rack, usually in the form of fused safety switches with individual enclosing cabinets and external operating handles. Below the safety switches, one of the many available forms of oil immersed switches was mounted, equipped with inverse time limit overload protection. Conduit nipples of various sizes and lengths were used between the bus gutter and safety switch and then between the safety switch and the oil immersed switch. Conduit was then

run from the motor side of the oil immersed switch to the motor location. This assembly of individual pieces of apparatus on the main switching rack with its interconnection of short conduit nipples was duplicated for each and every motor circuit.

Motor control of the desired type was usually mounted near the motor location, necessitating another break in the run of wiring between the bus and the motor to include the motor control. The cost of wiring materials and conduit together with labor and electrical apparatus represented an investment out of all proportion for the class of installation obtained. Also, labor and wiring materials were a total loss from the standpoint of salvage, when circuit changes or change of rating were required.

Safety codes, national standards, as well as operating practice, led to many variations in this combination. Municipalities have always superimposed special operating and safety requirements that further increased the cost of installation. Industries coming within municipality limits have been forced to carry the additional burden.

Switch rack construction also applied to 2200-volt service except that an exposed bus and disconnecting switches represented common practice. The lower part of the switch rack contained an oil circuit breaker for each motor circuit, equipped with inverse time limit overload protection. The motor control, as in the case of low voltage equipment, was located close to the motor and entirely separate from the switch rack. Complicated as these systems now appear to be, they represented the best practice at the time they were installed.

An item of major importance in connection with switch rack construction was the necessity for providing special locations and enclosures where chemicals, sawdust or refuse materials deposited on electrical apparatus might jeopardize continuous operation. The solution

*Engineer representing Crown Zellerbach Corporation, Olympic Forest Products Company, Rainier Pulp and Paper Company, Grays Harbor Pulp and Paper Company.

†Engineer, Westinghouse Electric & Mfg. Company, Seattle, Washington.

(1) "The Use of Metal Enclosed Switchgear in Paper Mill Electrification," by M. H. Hobbs, February, 1933, TAPPI, New York.

(2) "Switchgear Developments of Interest to the Pulp and Paper Industry," by G. M. Reed, February, 1934, TAPPI, New York.

to this special housing feature will be pointed out later in connection with cubicle construction.

The above discussion covers the important points of switchrack construction, operating experience with which indicated, high first cost, lack of adequate circuit protection and a continual hazard to operators and maintenance men. Numerous interconnections between scattered pieces of equipment, combined with the exposed mounting, caused operating difficulties and circuit troubles.

Experience gained with various forms of switch rack construction has enabled such organizations as the Olympic Forest Products Company, the National Paper Products Company, the Weyerhaeuser Timber Company and the Washington Pulp & Paper Corporation, to carefully consider the advantages of a form of construction which would concentrate motor control and circuit protective features within a self-contained structure, so enclosed as to not require special housing in control vaults or separate control rooms. If the electrical problems can be answered through the proper selection and construction of electrical apparatus, and the question of special housing features can be disposed of, there is no reason why the self-contained unit cannot be delivered at its ultimate location by the electrical manufacturer completely assembled and wired, requiring only feeder service connections, individual motor lead connections and suitable external control wiring. Since an electrical manufacturer could not obtain complete installed costs of electrical apparatus, nor accurately determine all operating advantages, it remained for the engineering departments of such progressive industrial organizations as named above, to foster the actual development of the complete unit control known as cubicle construction.

Cubicle control is distinctly divided into two separate classes: the first class involving all equipment and circuits 600 volts and below; and the second class applicable universally to 2500 volt circuits, with many 4000 volt circuits covered by the same analysis.

The plant of the Olympic Forest Products Company represents two distinct industries: a sawmill and a pulp mill, 2200 volt and 440 volt cubicle were laid out for all departments of the plant. Each group of 2200 volt cubicles varied in number between eight and twelve units; the 440 volt groups combined ten to thirty units. Each group was built

ECONOMIC FEATURES

The principal factors contributing to saving in installation time are: that conduit and cable work can be finished to a single point of interconnection before the cubicle is placed on its foundation, also metering circuits and control devices are completed within the cubicle by the electrical manufacturer. It should be feasible with a nominal sized electrical crew to complete the installation of a ten unit cubicle within ten days after delivery of the cubicle unit. The ease with which the preliminary work is installed and the simplicity of completing final connections should be compared with the intricate system of interconnection required by former switch rack construction. Cubicle construction also eliminates the expense of providing control vaults and special control rooms. Similar savings in installation and simplicity of construction apply to 440 volt cubicle control.

in a continuous assembly, sub-dividing only the larger groups for shipping purposes. Each 2200 volt cubicle unit contained circuit disconnecting switches, control and protection for one motor, while each vertical section of the 440 volt assembly contained circuit disconnecting switches, control and protection for two motors 30-h.p. and below. 440 volt motors 40-h.p. and above required one entire vertical section.

Construction of the 2200 volt cubicles consists of a three-conductor bar copper bus running continuously throughout the length of a complete cubicle group. The bus passed from one cubicle to another through an insulating separator and was mounted within each cubicle on bus supports. Each bus was entirely enclosed thus providing barriers between busses, and isolation from other apparatus. A special feature of barrier supports is a very light gauge angle iron running the complete length of each flat barrier section in place of the small foot angle used on the conventional forms of construction. Taps from the bus were taken to disconnecting switches located in the upper portion of the cubicle operated through rear opening doors.

The circuit from the disconnecting switches connected to circuit breakers of moderate rupturing ca-

capacity located in the lower portion of the cubicle. All circuit breakers were actuated by floor mounting solenoids operated from a d-c control bus. Breakers were so selected that rupturing capacity fulfilled short circuit requirements in any part of the plant. Each group of 2200-volt cubicles was served by a separate feeder controlled by a high capacity breaker located in the power house. In anticipation of an increased demand for circuit interrupting capacity, all major fault conditions which could be relayed at the individual cubicles were referred back to the feeder breakers located at the power house.

Since the power house feeder breaker were operated from a station battery, instantaneous overcurrent devices mounted as auxiliary units in standard induction overcurrent relays on the individual cubicles, caused instantaneous tripping of the feeder breaker. Each group of cubicles was equipped with an induction type under-voltage relay which caused opening of all circuit breakers in the individual sections of a given group for under-voltage conditions. Suitable overload protection was, of course, contained within each unit to meet the particular motor requirement. All cubicle units with their circuit breakers served as motor control equipment actuated by push buttons installed at the remote locations. The required instruments and relays for each section were mounted on the front panel.

A similar construction arrangement was used for the 440 volt cubicles except that a three-conductor bus ran through the extreme top and extreme bottom portions of each group (Fig. 1). Each 440 volt motor circuit starting at the bus, consisted of a front operated knife switch followed by a standard line-starter equipped with a thermal overload relay.

A review of the construction details of the 2200 volt cubicle units will clearly show that a group of cubicles can be delivered by the electrical manufacturers completely assembled and wired ready for location on a suitable foundation.

It is then only necessary to make feeder connections directly to the bus, connect the various motor circuits to their respective circuit breakers within the cubicle structure, and install the necessary push button circuits for remote operation. Connection of a direct current operating voltage to the control bus running the length of the cubicle group makes the job complete,

with a minimum of time and expense for installation.

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Safety is the controlling factor in the proportioning of cubicle design. Mill operators and electrical maintenance men are given the benefit of maximum protection in the operation of this type of equipment, by reason of the following safety features. These safety features are:

1. All live circuits are totally enclosed within each cubicle structure.
2. Door interlocks are provided to insure each compartment being clear if the section is opened.
3. Internal barriers are provided around bus and bus connections.
4. Maintenance men can be sure the correct disconnecting switches are open because they are segregated from others in the same group.
5. All current carrying parts are insulated for full circuit voltage.
6. Inexperienced operators can safely operate the control by remote push buttons.
7. The isolation of all electrical equipment prevents tampering by unauthorized persons.
8. Inspection and maintenance are aided by ample clearance. Maximum accessibility is obtained through full width swinging doors which can be provided on front and rear of each section.

All cubicle units are built on a frame of rigid standard structural steel shapes entirely self-supporting, and to which the sheet metal separators and partitions are later attached. This type of construction provides a unit which is entirely self-supporting, is a permanent housing, and if necessary can be

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moved without distortion of the assembly. The entire frame is supported on two channel irons to provide a rigid relationship between adjacent units. All cubicles, whether for 2200 volt or 600 volt service, are so designed and constructed that additional units may be added to either end by a simple extension of the main bus in the upper part of structure, and a similar extension of the control bus and channel iron base.

During the past four years, occasional additions have been made to the 2200 volt and 600 volt cubicle groups. In each case general outline dimensions have been made to conform to the original installation. Variations in the arrangement of internal apparatus mounting and methods of accessibility have been altered to meet requirements. Swinging panels front and rear, one swinging panel, removable back sec-

tion and disconnecting switches operated from either front or rear, are possible variations in arrangement. Special colors for voltage classification, individual control circuit switches for each cubicle, special metering equipment and complete relay systems for special motor control are readily obtainable.

Within the last year new switchgear developments have been incorporated in the design and construction of both the 600 volt and 2500 volt cubicles. The Westinghouse De-ion Nofuze circuit breaker in 600 volt ratings, has been substituted for the safety switch or fused knife switch previously used between the bus and linestarter (Fig. 2). These switches have an individual pole rating of 10,000 amperes interrupting capacity and afford complete circuit protection for 600 volt systems. The De-ion circuit breaker contains tripping characteristics for short circuit and inverse time limit protection. The line side of the De-ion circuit breaker is connected directly to the bus within the 600 volt cubicle while the load size connection is made to the linestarter. The function of motor protection still remains with a thermal overload relay mounted in conjunction with the contactor forming the motor starter.

The De-ion circuit breaker applied to 600 volt cubicle construction resulted in space saving by rearrangement of the relative location of the circuit breaker and the contactor for a given motor circuit. Only one main three-conductor bus is now built in to the complete length of the cubicle assembly. From this bus vertical feeder busses are installed for each pair of vertical sections. In the new design, for ratings 30 h.p., 440 volts and below, it is possible to build four complete units in one vertical section, each unit consisting of De-ion circuit breaker and motor linestarter. One vertical section will accommodate three larger units for motors 40 h.p. to 60 h.p., 440 volts. Thus it is possible to arrange to feed eight complete motor control units from a single vertical bus. The depth of the De-ion circuit breakers is such that they are mounted directly in front of the vertical bus compartment. The complete depth of the cubicle is used for the linestarter compartment. Segregation between individual busses is not attempted although a complete system of sectionalizing barriers is used throughout. The sectionalizing of the vertical bus is obtained by pairs of motor controls with a horizontal barrier

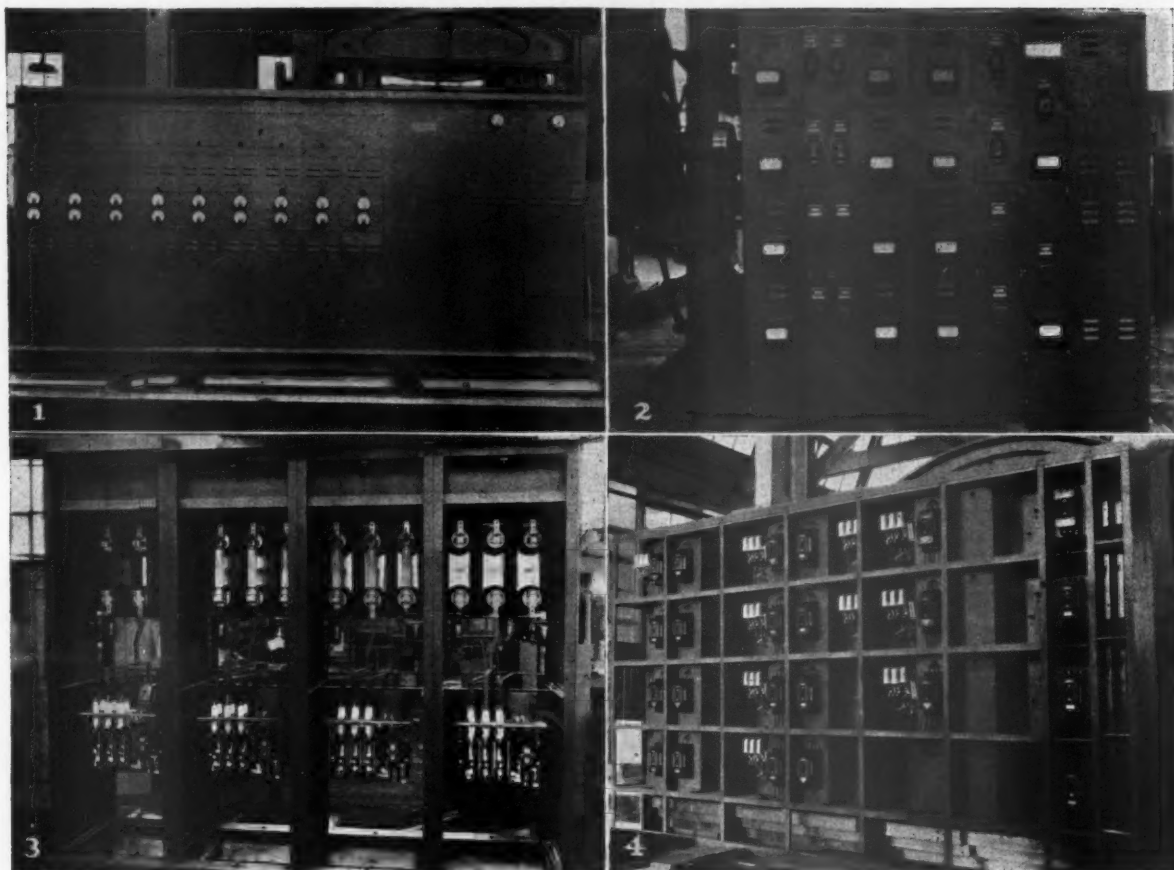


Fig. 1. 440-Volt Cubicle Group for 20 Motors. Using knife switches for circuit disconnecting switches. Fig. 2. Completed 440-Volt Cubicle for Fourteen Motors, using De-ion Circuit Breakers and safety covers over handle. Fig. 3. 2200-Volt Cubicle Group for Four Reversing Motors, using 7500-Volt De-ion Fuses and oil immersed contactors. Fig. 4. Partially completed Cubicle Group showing accessibility of all parts and connections.

acting as a bus spacer and bus support. No fuses are used in the 600 volt construction and a cubicle is delivered completely assembled and wired with or without ammeters, as desired. Feeder service connection is made to the main bus and the individual motor and push button circuits are taken off from the cubicle at the rear of their respective contactor compartments. This arrangement of conduit location to the individual motors provides absolute segregation of circuits and isolates circuit difficulties in such a manner that only one motor can be affected.

The Westinghouse type "BA" De-ion fuse recently applied to 2200 volt cubicles has resulted in important changes in the combinations of electrical equipment. The type "BA" 7500 volt De-ion fuse has an individual rating of 25,000 amperes interrupting capacity which is an equivalent three phase rating of 325,000 Kv-a. When applied to a 2500 volt system the fuse has 25,000 ampere rating or an equivalent

three phase rating of 108,000 Kv-a (Fig. 3). Mounting details for this fuse have been designed to permit using the total fuse-enclosing cartridge as a disconnecting switch with the fuse supported in the open position on the lower insulator by means of hinge pin supports. Also, by the use of a hook-stick, the fuse may be lifted entirely out of place when occasions demand complete removal of the fuse unit. A fuse of this type opens new possibilities with respect to the selection of apparatus for motor circuits within industrial plants, also the fuse is renewable in the field. As such a fuse will provide adequate circuit protection within the limits of its rupturing capacity and also serve as a disconnecting switch, standard oil immersed contactors and other conventional types of motor starters can be safely applied.

The oil immersed contactor for 2500-volt service is simply a continuation of the 600-volt magnetic contactor universally used for magnetic

control operation. The oil immersed contactor is operated by means of an a-c coil which is continuously energized throughout the time that the contactor is closed, thus providing the simplest possible protection against loss of control voltage or loss of main power voltage. This feature of control operation is the principal distinction between standard contactor equipment operated from an a-c coil, and circuit breaker operation. Since a circuit breaker is latched in the closed position, some positive means of energizing the breaker tripping coil must be provided. Under-voltage devices cannot always be used and the cost of providing direct current tripping energy is an important factor. The complications of circuit breaker operation as motor control units, are eliminated thru the use of a contactor which is not only a-c operated but is continuously energized when closed. Control voltage is obtained by using an operating transformer

with a secondary rating suitable for the contactor coil circuit, while the primary is connected to the power feeder supplying power to the motor. Under-voltage therefore affects the motor and control simultaneously causing the contactor to open and remove power connection from the motor. The limited rupturing capacity of the oil immersed contactor has prevented its use as a circuit protective switch but when circuit protection is accomplished with the type "BA" De-ion fuse, the oil immersed contactor can be adapted to the function of motor control.

The contact opening thermal overload relay controls the coil circuit of the oil immersed contactor and the simplicity of standard linestarter control is attained.

Experiences with the installations of 600-volt cubicles demonstrated the economy of complete unit as-

sembly by the electrical manufacturer. Complete circuit and apparatus protection is obtained with the De-ion Nofuze circuit breaker, and all fuses are eliminated. Standard linestarters and thermal overload relays are assembled into the most compact yet most accessible form. Even with this important space saving, each motor conduit connection is made to an individual contactor compartment for complete isolation of all circuits.

In the 2500 volt cubicle class, the use of oil circuit breakers demonstrated what could be accomplished with unit construction. The development of the De-ion fuse simplifies construction and apparatus selection, which further assists in the 2200 volt motor control problem. Complete unit assembly can be made by the electrical manufac-

turer to accomplish a unit construction that combines circuit disconnecting switches, circuit protection, motor control and motor protection.

Motor control cubicles in any voltage classification may contain any combination of apparatus for squirrel cage, wound rotor or synchronous motors, to eliminate the special control vault or control room, and as a means of reducing the installation time to a minimum. The character of this design guarantees greater safety to operators and maintenance men while the quality of internal construction permits electrical apparatus to function at maximum efficiency.

A review of these important features, combined with flexibility of construction, make cubicle type motor control units worthy of consideration for new mill projects and rehabilitation of existing plants.

B. C. PULP IMPROVES FINANCIAL CONDITION

Improvement in the business done by British Columbia Pulp & Paper Company, Ltd., with head offices in Vancouver and mills at Woodfibre and Port Alice, has permitted the company to meet full interest payment on the 6 percent first mortgage sinking fund gold bonds on the due date November 1, according to President Lawrence Killam.

The November payment is the last of the payments which the company obtained permission from bondholders to postpone if necessary. By agreement in May, 1933, the bondholders agreed to postpone interest installments falling due in 1933 and 1934 on the understanding that they would be payable in order of their maturity as and when "cash available from operations is sufficient to pay them."

Under this plan payment due May 1, 1933, was made October 16, 1933, with interest at 8 percent from May 1. Before the November 1 due date conditions had improved sufficiently to permit payment in full on December 1, 1933, only one month's deferment being necessary.

May 1 of this year payment was made without any postponement and the same condition will obtain on November 1. Bondholders waived and cancelled sinking fund installments due in 1932, 1933 and 1934. The 6 percent first mortgage bonds are outstanding to the amount of \$3,321,000.

So far as the 7 percent general mortgage sinking fund gold bonds due 1950 are concerned, bondholders agreed to postpone interest payable in 1932, 1933 until November 1, 1934, interest to accrue at 7 percent on payments so deferred. Sinking fund payments were cancelled from 1932 to 1934 inclusive.

Mr. Killam says that volume of business is being well maintained, although the price situation is anything but satisfactory and worse than it was eighteen months ago. The company's mills are still operating at capacity. He points out that a new competitive factor is now encountered in the Orient as a result of the entry of Oregon and Washington mills into that field. He does not look for an early advance in pulp prices, partly because of the breakdown of the Scandinavian pulp conference which had sought a greater degree of stability in the industry.

MOODY GIVES TALK

Anson Moody, assistant secretary of the Everett Pulp & Paper Company of Everett, Washington, addressed a luncheon meeting, September 17th, of the Printing Industry of Snohomish County at the hotel Monte Cristo in Everett. Mr. Moody spoke on the manufacture of printing paper from pulpwood through to the finished paper.

CROWN-WILLAMETTE TAXES

The revised personal property tax valuation of the Crown-Willamette Paper Company at Camas, Washington, of about a \$1,000,000 is almost identical with the entire personal property valuation in the city of Vancouver, Washington. This shows clearly the heavy contribution being made by the company to the personal property taxes of Clark County, and its importance in supporting the schools and government.

FIR-TEX CHIPPING UNIT IN PRODUCTION

In late September the chipping unit of the Fir-Tex Insulating Board Co., St. Helens, Ore., entered production, marking a new departure in the manufacturing process of the company. Major equipment in the chipping department includes a barker, a screen and a chipper, all of Hesse-Ersted design and manufacture. Business in Fir-Tex is gradually expanding. The basic wage scale was recently advanced 10 per cent.

GRAYS HARBOR UNIT NEARLY FINISHED

The new addition to the pulp mill of the Grays Harbor Pulp & Paper Company at Hoquiam, Washington, will be completed early in November. The additional digester will materially aid the mill in maintaining a smooth production of pulp both for the paper mill unit and outside customers.

WHAT EAST THINKS OF WEST

Eastern visitors to the TAPPI convention held September 9th to 13th in Portland, Oregon, expressed an intense interest in the development of this region as a pulp and paper making center during the past ten years, and a conviction that the natural resources of the Pacific Northwest would support an industry of far greater proportions upon a perpetual basis, creating more employment of a permanent nature in the production of sufficient pulp and paper to make the United States independent of foreign imports.

A few of the comments are printed below:

G. N. Collins, International Paper Co., New York, N. Y.: "I have been delighted with what I have seen of the pulp and paper industry of the Pacific Coast. The wealth and quality of the raw materials, the ample supply of power available, make positive a substantial further development in the industry in this region. Before returning I intend to visit many of the operations and inspect methods and the products of the mills."

Helen U. Kiely, American Writing Paper Co., Holyoke, Mass.: "It has been both a distinct pleasure and a valuable business aid to visit the Pacific Coast, mingle with the men and women of the pulp and paper industry and inspect the raw materials and the products made in the West. I am sure that much benefit will come from this for those of us in the East as well as those who have so royally entertained the TAPPI visitors. We come to learn and I, for one, have learned much."

Harold H. Murdock, Champion Fibre Company, Canton, North Carolina: "We are large consumers of Pacific Coast pulp. I will undoubtedly benefit materially from this trip. It has brought a new understanding of the pulp wood resources and producing capacity and I, for one, expect to see substantial growth in the West and increased use of Pacific Coast pulp in the East."

H. H. Harrison, Crystal Tissue Company, Middletown, Ohio: "This trip has been of great benefit, not only because of the friendships made, but because of the better understanding of Pacific Coast methods and resources gained. I am anxious to learn more about western production and possibilities."

C. E. Curran, in charge Paper Section Forest Products Laboratory, Madison, Wis.: "The interest in western production and western resources I have noted among eastern visitors on this trip serves to intensify my belief in the great possibilities of the pulp and paper industry upon the Pacific Coast. The modern plants and methods I have seen bespeak substantial progress and point the way toward future substantial developments."

C. C. Heritage, Oxford Paper Company, Rumford, Maine: "I cannot speak too highly of the value and the pleasure resulting from this pilgrimage to the West Coast. Wood resources, water, climate, power unite to make of the Pacific Coast an ideal location for the pulp and paper producer, a combination of natural advantages which can only result in expansion of the industry and widened interest in its products."

C. J. Kern, The Moore & White Company, Philadelphia, Pa.: "This has been one of the most interesting trips I have ever made. I am amazed at the progress of the western pulp industry and can hardly believe that this has taken place in so short a time."

J. F. Rhoades, Mead Corporation, Chillicothe, Ohio: "The plants and the talks with western operators have been intensely interesting to me and I am taking home with me much valuable information to digest."

F. J. Kranhold, Kimberly Clark Corporation, Neenah, Wis.: "I certainly envy the wood supply of the Pacific Coast. We endeavor to use fresh wood and take special pains to prevent dirt and gravel from entering the wood. We are using some hardwood. Our wood cost, which is around \$12.50 a cord, is certainly much higher than yours."

G. W. E. Nicholson, Southern Kraft Corporation, Mobile, Ala.: "The size of the western pulp wood amazes me. Apparently the western mills like large logs; to handle them would bring to us added cost. Our supply is plentiful, but upon the Pacific Coast would probably not be regarded as good sized second growth. Evidently there will never be any shortage of pulp wood in the West. The South and the West are the two great future pulp producing regions of the United States

and have much to work for in common."

H. Liebeck, Scott Paper Company, Chester, Pa.: "This visit has been most pleasant for me and I have learned much from it. TAPPI with its broad facilities for bringing about exchange of information, the friendships one makes upon such trips and the free exchange of ideas will be reflected in more rapid progress in the industry. My interest in the Pacific Coast was renewed and intensified by this trip."

E. P. Klund, Hammermill Paper Co., Erie, Pa.: "It was about 40 years ago I made my first trip to the Pacific Coast in connection with some equipment which was being installed in what is now the Crown-Willamette Paper Co. My interest in the West has never flagged and upon each trip West I see evidences of substantial progress. The progress of the past is but a forerunner of the accomplishments of the future I am sure."

Geo. F. Durand, Port Huron Sulphite & Paper Co., Port Huron, Mich.: "Never had so much fun or saw so much in a few days. The pulp wood resources impress me tremendously. Samples of young growth are amazing. The West looks good to me."

Alex Johnson, Provincial Paper, Ltd., Port Arthur, Ontario: "I have been particularly interested in the opportunity to inspect the mills and methods employed on the Pacific Coast."

Shinji Kimura, Mitsubishi Paper Mills, Ltd., Kobe, Japan, was one of the most interested visitors present and expressed deep concern in the supply of pulp wood and pulp.

JOINS TAPPI

James G. Long, chemical engineer, with the Technical Control Department of the Crown-Willamette Paper Company at Camas, Washington, has recently become a member of the Technical Association of the Pulp & Paper Industry. Mr. Long graduated in 1928 from the department of chemical engineering at the University of Washington.

Lumber and wood products pay 63½ percent of all wages and salaries of Oregon's manufacturing industries. A "sustained yield" forest program might be a "life saver" for Oregon—if, and when.

AN UNUSUAL MILE LONG STEAM LINE

Construction and Operation of the 14 Inch Steam Line
Between the Power Plant of the Washington Gas and
Electric Company and the Plant of the Longview Fibre
Company at Longview, Washington

By RALPH T. SMALLEY*

Transmission of power has been a continuing problem since power was first conceived as an aid to mankind. There is a temptation to dwell on the romance involved in the step-by-step development of various solutions of the problem, but I am restrained by the conviction that members of this association are not as a rule sentimental as regards to the problems of their own industry. Transmission of power as a modern day problem calls to mind high tension transmission lines for conveying electrical energy from its source to distribution centers. Personally, because of my own training, I could with more confidence, discuss electrical power transmission, but since I have been asked to present information on the transmission, I will confine myself to that subject.

The transmission of high pressure steam in large quantities and over a comparatively long distance is an accomplished fact, and with a year and a half of satisfactory operation, we can assure you it is a successful accomplishment.

In 1932 the Longview Fibre Company was generating all of its own steam and a portion of its electrical requirements, purchasing from the Washington Gas & Electric Company the balance of the electrical power required. Its growing needs both for power and steam called for additional facilities. The Washington Gas & Electric Company had available capacity for both services and since the increased electric load required only additional substation capacity and heavier conductors, the problem became one of steam transmission. The economics of the situation having been agreed to by the respective companies, the power company's engineers tackled the

problem of the design and construction of the steam line.

Although no new fundamental principles were involved, the length and capacity of the line were such that little precedent could be found upon which to base its design. Larger capacity lines have been built, and longer lines were in operation, but so far as we could determine no line of equal size and length had ever been constructed. The initial requirements call for an average delivery of practically 100,000 lbs. of steam per hour, with periodic swings up to 150,000 lbs. per hour at the time of charging the digesters. There was the further possibility that twice this average amount of steam might eventually be required. It was specified that the steam should have a condition of not less than 195 lbs. guage, dry, saturated. The distance from the power plant of the Washington Gas & Electric Company to the mill of the Longview Fibre Company is just over a mile, the route of the line being just 5700 feet. Continuity of service and provision for increased steam demands in the future, were prime considerations. It was agreed at the outset that the best type of construction would be the most economical.

With all these considerations in mind, seamless steel tubing, class B, 14-inch outside diameter was selected for the pipe. It has a wall thickness of 5/16 inches and weighs nearly 50 lbs. per foot. The steam entering the line, normally has a pressure of 240 lbs. guage, and with a superheat of 150 degrees of superheat, the total temperature of the steam is approximately 550 degrees. The delivery conditions noted above permitted a total pressure drop normally of 45 lbs. and under extreme conditions the pressure drop could be as much as 100 lbs. It is, therefore, quite evident that the design of the line involved some interesting problems in dealing with expansion, suspension, insulation and metering.

With steam at 550 degrees, the expansion per 100 feet of line is over 4.5 inches, so that with the line at a uniform temperature, provision had to be made for a total expansion in excess of 21 feet. Bear in mind that the facilities for expansion had to take care of this unusual change in length, each time the line was heated and cooled. Although there was some flexibility in the line due to offsets necessary to avoid existing structures and to utilize the best available right-of-way, we deemed it advisable to provide for the total expansion, within the expansion units themselves. Various types of expansion bends were considered but the final design called for a total of 13 bends made of plain pipe, the smallest having a radius of 72 inches and the larger ones a radius of 120 inches. It may serve to emphasize the size of these larger bends by noting that each one required more than 100 feet of pipe. They are designed to take care of a linear expansion of 24 3/4 inches each. When installed in the line, all bends were sprung apart cold, to one-half of the allowable expansion movement, so that they are in a normal unstressed position when one-half of the total expansion has taken place, and carry the allowable working stress when the line is either cold or full expansion has taken place. The stress in the bends called for a wall thickness of 3/4 inches in the 14-inch pipe material used in making the bends.

It developed that the weight of the pipe covering slightly exceeded the weight of the pipe itself, and interestingly enough the bare pipe full of water for the hydrostatic test had substantially the same weight. The facilities for suspension and support of the line, had to be designed to carry a weight in excess of 100 lbs. per running foot. The suspension members also had to permit of flexibility for the large movement resulting from expansion as well as freedom for lateral movement. The

*Presented at the International Convention of TAPPI, Portland, Oregon, September 10th to 13th, 1934, by Ralph T. Smalley, Vice-President, Washington Gas & Electric Company, Longview, Washington.



line is entirely above ground, although one section of approximately 300 feet is carried through an existing tunnel and another section of about 100 feet passes through one of the head mill buildings of the Long-Bell Lumber Company. A minimum ground clearance of 6 inches is adhered to except at the delivery end of the line, where it was necessary to elevate the line to obtain twenty-five foot clearance over tracks, roadways and existing structures. It is obvious that the line had to be anchored between expansion joints and that the travel of the pipe due to expansion would be at a minimum half way between anchors, at which points the expansion bends were installed.

The type of support principally used is a simple A frame, made of 3½-inch steel pipe, embedded in concrete, with a suspension member consisting of a 1¼-inch steel rod having a swivel attachment both at the top of the A frame and into a clip welded into the pipe. These A frames are spaced approximately 25 feet apart and are slightly over 10 feet in height. This height was necessary so that no undue vertical movement of the pipe takes place during expansion. All expansion bends are supported horizontally to facilitate drainage. Where existing structures did not permit the use of the A frames, the line rests on steel plates set on concrete piers in a manner permitting lateral as well as

linear movement of the line. In the elevated section of the line, for a distance of 363 feet, the line is suspended from wooden towers of a height sufficient to give the necessary clearance. One of the large expansion bends had to be located in this elevated section and is also suspended from a tower of special design. The line is anchored between expansion bends, fifteen anchors being installed. The maximum distance between anchors is 582 feet. Drainage in the line is provided by drip pockets and one-inch steam traps installed at approximate intervals along the line. The line has a slight slope toward these pockets.

A remarkable degree of flexibility in the line has been attained. It is possible to set in motion, like a huge pendulum, a whole section of the line between anchors, by exerting a slight backward and forward pressure on any hanger supporting an expansion bend.

Proper insulation of the line was of paramount importance. With nearly 21,000 square feet of pipe surface to be covered, the possibility of enormous heat losses with inadequate insulation was apparent. Based on an analysis of the relation between heat losses and fuel costs, it was decided to insulate the line with 3 inches of 85 per cent magnesia covering. This material is suitable for use at temperatures up to 600 degrees. For ease in application, an inner layer of 1½ inches thick, in

sectional form and an outer layer of the same thickness but in segmental form was specified.

In view of the large amount of steam sold and delivered through the line, accurate metering was most essential. Steam flow meters, with attendant pressure gauges and thermometers were installed at both the inlet and delivery end of the line. These flow meters both indicate and record the rate of flow and record the total amount of steam passed. The customer has a duplicate meter installed at the delivery end of the line. This flow meter uses the same orifice nozzle as the other meter and is used for check purposes. As originally installed the flow meters recorded up to a maximum rate of flow of 150,000 lbs. of steam per hour. Within a short time, thereafter, the Longview Fibre Company increased its requirements to such an extent that it was necessary to make changes in the metering equipment so that it would record flows up to 200,000 lbs. per hour. The flow meters will record with reasonable accuracy steam flows down to 5 per cent of their rated capacity. A steam flow meter has also been installed in a 3-inch by-pass line, in order to measure flows below this amount and to check line losses when no steam is being used.

With the exception of eight joints where extra heavy Van Stone flanges are used the entire line is welded. The pipe was purchased in double

random lengths with a wide bevel for gas welding. Due to the size of the bends, it was necessary to ship them in sections from the shop where they were fabricated, and then weld them in the field. The larger bends required four welds each. In deciding upon the type of welding to use in the line we made careful tests between electric and gas welds. We decided the electric welds were too brittle and lacked bending or tension strength. The electric welds also failed to get full penetration. There are a total of 200 welds in the main line. Welders averaged six welds per day on the line and three per day on the expansion bends. In addition to the main line welds, there were a total of 444 welds on the hangers, supports, anchors, etc. Welding costs exceeded our estimate due in part at least, to adverse weather conditions. Approximately two-thirds of the welding costs was for material, rods and gas and the remaining one-third for labor. The line was tested in sections by applying 500 lbs. hydrostatic pressure and using the hammer test around all welds. The care exercised in the welding was evidenced by the fact that there was not a single flaw found in any weld.

In applying the insulation, each of the 1½-inch layers were securely wired in place, and a finish coat of hard asbestos cement was applied. Weatherproofing was accomplished by covering the line with two layers of 15-lb. asbestos felt, spirally wound, and mopped together with all joints thoroughly sealed with asphalt. All flanges, valves and fittings were insulated in a similar manner.

The steam line takes off of a 12-inch header in the power plant and delivers into a 12-inch header at the paper mill, each end of the line being controlled by a 12-inch gate valve. In addition to the gate valve at the intake end, we have installed a balanced lever valve with a diaphragm operated regulating device. This valve functions to prevent an excessive drain on the steam headers in the power plant. The regulating device is set to maintain a minimum pressure on the header and if the pressure drops below this point, it throttles the valve, controlling the line. In addition the balanced valve will close automatically with any sudden drop in pressure on the discharge side of the valve, such as might be occasioned by a break in the line. A 3-inch by-pass line is constructed around the valves on the intake end of the line and controlled by a 3-inch globe valve. In warming the line up and bringing it into ser-

vice, the main valve is kept closed and steam enters the line through the by-pass. Pressure is thus equalized on both sides of the main valve when it is opened. A reducing valve is installed on the delivery end of the line, to equalize the pressure at the point of delivery.

Considering adverse weather conditions and many other factors involved we feel that we made a remarkable record in the construction of this line. The contract between the Longview Fibre Company and ourselves was signed on October 12, 1932, and on January 26, 1933, the line went into service. Within that period we designed the line, purchased the materials and built the line. In order to get the standard of material we wanted, the steel for the pipe had to be poured, billets rolled, and tubing spun in an eastern mill and shipped through the Canal and up the west coast to Longview. The pipe for the bends had to be unloaded in San Francisco, where the bonds were fabricated and then re-shipped. Although I may be criticized for advertising, I think I should give recognition to certain firms who contributed largely to the early and successful completion of the job. C. C. Moore and Company, engineers of San Francisco, were responsible for the details of design, Crane and Company furnished the pipe and fabricated the bends while Johns-Manville supplied the pipe covering. The total cost of the line was just under \$57,000.00 or about \$10.00 per foot of line. This figure covers design and all construction overheads. I might add that the costs today would be considerably higher.

The line was placed in service on January 26, 1933, and has been in continuous use since. Steam has been off of the line only two or three times since it first went in service, incident to changes in the meters, etc. We have had no operating or maintenance problems of any kind to date. In putting the line into service, the one and one-half-inch blow-off valves, located at the steam traps, are opened and then steam is admitted to the line through the three-inch by-pass. When the line is cleared and heated, these blow-off valves are closed progressively starting at the plant end. The pressure is then brought to normal, the 12-inch valve opened, and the by-pass closed. This warming up operation normally requires about one and a half hours. The steam traps are inspected frequently and it has been necessary to replace a few discs and valve seats.

We have not attempted to keep

detailed statistics on the operation of the line. Tests over short periods of duration during the first few months the line was in service showed that the pressure drop between the inlet and delivery end of the line varied from 3 pounds with a flow of 60,000 lbs. per hour to 21 pounds with a flow of 120,000 lbs. per hour, when the pressure at the plant end was 235 pounds. The drop in pressure has been less than anticipated due to certain changes in design and the class of material used. The reducing valve at the delivery end of the line was not in the original design, but with the lower pressure drop and the wide variation in the rate of flow, it was found to be necessary in order to maintain a reasonably uniform pressure. The metering equipment is on the low pressure side of this reducing valve, and consequently all data on pressure drop, now includes the throttling effect of this valve. A separator, originally installed on the delivery end, has since been removed since it was found to be unnecessary.

In December of last year, the orifice plates for the steam flow meters were removed and flow nozzles installed to increase the capacity of the flow meters to 200,000 lbs. per hour. Since that time, we have recorded rates of flow as high as 195,000 lbs. per hour. A check of a recent 24-hour period shows a total delivery of 3,723,122 lbs. of steam for the period or an average rate per hour of 155,000 lbs. per hour. The heat loss on that day was the extremely low figure of 12.7 B.T.U. per pound of steam or about 1 per cent. For the month of July a total of 86,345,145 lbs. of steam was delivered through the line. The average pressure at the inlet was 229.64 lbs. and the average total temperature was 548 degrees. The average pressure at the point of metering on the delivery end was 187.7 lbs. and the average total temperature there was 508 degrees. The heat loss for the month was about 1.4 per cent. 101,217,000 lbs. of steam was delivered during the month of August, an average of 136,000 lbs. per hour for every hour in the month. For the 19 months in which the line has been in operation, no less than 770,000 tons of water in the form of superheated steam has been carried through the line at an average velocity of well over a mile per minute. I have with me some photographs of the line taken during the construction period and also a few blue prints of certain details of construction if any of you care to see them.

SOME EXHIBITS AT THE TAPPI CONVENTION



ON THE OPPOSITE PAGE

Some of the interesting exhibits at the recent TAPPI convention at Portland are shown on the opposite page. At the upper left is shown the exhibit of the Pacific Coast Supply Company, arranged by William R. Weill, manager and located in the center of the Multnomah Hotel lobby. Mr. Weill's exhibit included displays of the following companies represented on the Pacific Coast by the Pacific Coast Supply Company: Eastwood-Nealley Corporation, F. C. Huyck & Sons, Texas Gulf Sulphur Company, Heller & Merz Corporation, California Cotton Mills Co., E. D. Jones & Sons Company, the Norton Company and Jos. J. Plank & Co.

The other exhibits shown are those of the Electric Steel Foundry Co., Columbia Steel Corporation, Pacific Coast subsidiary of the U. S. Steel Corporation; the Western Gear Works and its affiliated organization, the Pacific Gear & Tool Works; the Bagley & Sewall Company; the Foxboro Company; Oliver United Filter Co.; Morden Machines Co.; Edgar Brothers Co., and the Chromium Corporation of America. The exhibits by makers of equipment and supplies added much to the success of the International TAPPI Convention.

M. C. BURRELL PASSES AWAY

M. C. Burrell, vice-president and general manager of the Orr Felt & Blanket Company of Piqua, Ohio, died on October 10th. Mr. Burrell had been in ill health since contracting pneumonia last December. During his many years with the Orr company, Mr. Burrell made a number of trips to the Pacific Coast and built up a wide circle of friends in the Western mills.

CHARLES MYERS DIES

Charles Myers, formerly manager of the Fibreboard Products mill at Port Angeles, Washington, died of pneumonia October 4th at Muncie, Indiana.

Mr. Myers managed the Port Angeles plant from 1919 to 1931, leaving to become a farmer near Muncie, Indiana, where he had purchased a large tract of land.

DAHLGREN VACATIONS

Ernest Dahlgren, construction foreman for the Rainier Pulp & Paper Company at Shelton, Washington, left on a three weeks' vacation the middle of September, starting out for Chicago in his new car.

TASMANIAN NEWSPRINT DEVELOPMENT

Two of the most interested visitors at the Portland convention of TAPPI were Louis R. Benjamin, technical advisor and superintendent in Tasmania, and J. L. Somerville, both of the Derwent Valley Paper Co., Ltd., Hobart, Tasmania. This firm is a subsidiary of the Herald & Weekly Times, Ltd., Melbourne, Australia. Following laboratory tests it was decided that commercial tests would be required before starting construction of a newsprint mill to utilize Tasmanian hardwood. The wood selected as the most suitable is Eucalyptus regnans, 600,000 feet of which was shipped to Pacific Mills, Ltd., Ocean Falls, B. C., where tests on a commercial scale have been satisfactorily concluded and the decision reached that the wood will make a suitable newsprint for use in Australia. Mr. Benjamin and Mr. Somerville are now visiting plants in the South and East, getting data on methods and equipment.



J. SCHEUERMAN ON WEST COAST

Among those present at the TAPPI International Convention held at Portland, Oregon, last month was the Mid-West Representative of the Cameron Machine Company, Mr. Joseph Scheuerman. His visit to the convention, was a prelude to a sales trip that will take him up and down the West Coast, giving him the opportunity to pass along to his many friends in the industry the news of the latest developments in slitting and roll-winding equipment.

Mr. Scheuerman will spread the word of the big 310-inch wide wind-er which the Cameron Machine Company of Canada, Ltd., is shipping to England about the end of September for Edward Lloyd, Ltd.



FRANCIS VISITS COAST

Attending the TAPPI convention in September and then calling on all the pulp and paper mills from British Columbia to Los Angeles, Arthur F. Francis, in charge of paper mill sales for the Chromium Corporation of America, had an unusually busy trip.

Mr. Francis reported that chromium plating is being widely adopted by the industry for preventing corrosion and reducing friction on an ever increasing number and variety of machines.

SUMNER SELLS PULP MACHINERY

The Sumner Iron Works of Everett, Washington, shipped early in October a Norman chip duster and an 84-inch chipper to the Oregon Pulp & Paper Company at Salem, Oregon. A 96-inch cut-off saw was shipped to the Hawley Pulp & Paper Company at Oregon City, Oregon.

Sumner are now building two 84-inch chippers for the wood room of Pacific Mills Limited at Ocean Falls, B. C.

A Norman chip duster was recently purchased by a pulp mill in Norway.

Work is about completed on the log haul, hog, transfer tables, slasher and heavier conveyors for the new wood mill of the Washington Pulp & Paper Corporation at Port Angeles, Washington.

Additional copies of the souvenir program of the TAPPI convention held in Portland, Oregon, September 9th to 13th, are available at 15 cents per copy. Address Walter S. Hodges, secretary-treasurer of the Pacific Section of TAPPI, 2860 Northwest Front Avenue, Portland.

T · R · A · D · E • T · A · L · K

of those who sell paper in the western states

+ + + +

ZELLERBACH SERVICE RECORDS

The only man in the entire large organization of the Zellerbach Paper Co. to wear a 40-year service pin today is Alma C. Lambert, salesman at the firm's Salt Lake office, and this emblem was bestowed upon Mr. Lambert at a recent ceremony. Mr. Lambert went to work for the company in 1894.

At the same ceremony a 35-year pin was given his brother, William G. Lambert, manager of the Salt Lake office and a 30-year pin to Theodore A. Schoenfeld, also a salesman at Salt Lake.

HUGHES MARRIES

Dick Hughes, a popular salesman of the Zellerbach Paper Co. at Sacramento, recently returned to his former stamping grounds at Spokane and took unto himself a bride.

PERSONNEL CHANGES

Ernest Van Es, former manager of the accounting and auditing department of the San Francisco division of the Zellerbach Paper Co., has been transferred to Seattle as manager of operations and personnel at the firm's division office there. He succeeds Pat Murphy, who goes to the sales department. Barron Atkins of the Zellerbach's headquarters accounting staff at San Francisco, succeeds Mr. Van Es as head of the accounting department of the San Francisco division.

Ray Callison has been transferred by the Zellerbach Paper Co. from San Francisco to become manager of the credit department of the Seattle division and he made the promotion as occasion to get married and took his bride north.

Ben Levison, San Francisco, paper mill representative, was in Los Angeles recently for a week's visit. Ben says he thinks business in the San Francisco territory is in a far more healthy and substantial state than it was a year ago and he credits this to the cooperation displayed by the paper trade members.

MINIMUM MARK-UP UNDER PAPER DISTRIBUTOR CODE EXTENDED TO JAN. 31

Extension until January 31, 1935, of the order requiring a minimum mark-up over replacement cost in all sales of merchandise of the paper distributing trade and extension of the specified scale of mark-up, was announced by the National Industrial Recovery Board.

This order expired on October 1, but was renewed and extended to give full opportunity to collect data on its operation.

The Board was informed that "operations under the replacement cost and allowance for wages of labor have not led to increased prices", and that "operations under the replacement cost provision have resulted in orderly marketings of speculative stocks of paper accumulated during 1933, and have stabilized paper mill operations by discouraging speculative buying during the summer just passed."

GENERAL HAS NEW SAMPLES

Harry D. Bean, general manager of the General Paper Co., San Francisco, has been busy revising the General's sample cabinets in their San Francisco and Oakland office territories. Distinctive new sample folders are being put out and they are printed in red and black, pylon designed, so they can readily be told from the samples of the other houses. They fold at the bottom instead of at the side.

DON INGRAM BACK FROM OIL FIELDS

Donald Ingram of the Ingram Paper Co., Los Angeles, returned recently from a trip to Texas, where he went with his father, combining business and pleasure. During their stay they visited the Texas oil fields, where the Ingrams have extensive holdings.

FRENCH VACATIONS AT CATALINA

Oliver French of the Fred H. French Paper Co., Los Angeles, spent three weeks during August and September at Santa Catalina Island with his family.

BERT REYNOLDS ORGANIZING L. A. PAPER TRADE

B. W. Reynolds is busy at work in his new offices in the Higgins building, Los Angeles, functioning as secretary of the Southern California Trading Area Sub-Committee, of the Code Authority for the Paper Distributing Trade, and according to reports in the trade, he is doing a good job of holding things in line in a difficult territory.

S. J. Coffman, who formerly handled trade association affairs in Los Angeles, is director of the Printing Paper Credit Bureau, in adjoining offices.

WALLY MOORE BACK IN L. A.

Wally Moore, Los Angeles representative of the Milwaukee Lace Paper Co., is back on the job after a vacation at Lake Arrowhead and a trip to San Francisco.

GORDON MURPHY RANCHES IN MONTANA

Gordon Murphy, head of the fine paper department of the Zellerbach Paper Co., Los Angeles, returned at the end of August after an absence of a month, which he spent with friends on their ranch in Montana. While there he acquired a coat of tan that has caused a wave of envy and admiration among his Southern California friends.

EARL CRAVER ILL

Frank Gladden of the New York office of the Continental Bag & Paper Co. is in Los Angeles looking after the business of the company while their Southern California man, Earl Craver, is ill. Mr. Craver is at present in El Paso recovering. Mr. Gladden is making his headquarters at Johnson, Carvel & Murphy.

VISITS NORTHWEST

T. J. Finerty, wrapping paper sales manager at the San Francisco headquarters of the Zellerbach Paper Co., was on a trip through the Northwest in October.

Alfred Srere, president of the Miami Valley Coated Paper Co., is now in Los Angeles, visiting with his father, who has been ill.



ARTHUR TOWNE PROMOTED

Announcement has just been made by James K. Moffitt, president of Blake, Moffitt & Towne, that the board of directors has appointed Arthur W. Towne manager of the San Francisco division, the parent house of the large coastwide chain of paper merchants. Established in San Francisco in 1855, the company is a true pioneer in the wholesaling trade, and Arthur W. Towne is a representative of the third generation in its active management, his grandfather, J. W. Towne, having been associated with James Moffitt and Francis Blake, the founders, and his father, A. G. Towne, having served as head of the company prior to his retirement from business and death, several years ago. His brother, James W. Towne, is first vice president of the corporation.

Arthur Towne's experience in the paper business began shortly after his graduation from the University of California in 1916. With the entry of the United States into the world war, he attended the first officers training camp and was commissioned Second Lieutenant in the Coast Artillery Corps. Of his two years service in the army, six months were spent in France with the 67th Artillery, C. A. C.

After the war he re-entered the paper business, devoting his energies to the selling and advertising activities of the company. Always a believer in sound business co-operation, Mr. Towne has interested himself in the affairs of the Na-

tional Paper Trade Association and the Pacific States Paper Trade Association. He served as president of the Pacific States body last year, presiding over the annual convention held last May at Del Monte, Cal., and as director of the National Association, represented the coast at the fall meeting at Chicago and the annual meeting held in New York in February. Code activities have also occupied much of his attention and during the organization period Mr. Towne acted as vice chairman of the Pacific States Regional Committee of the Paper Distributing Trade.

In commenting on the appointment of Mr. Towne as manager of the San Francisco division, O. W. Mielke, under whose direction as general manager the merchandising activities of the corporation center, emphasized Mr. Towne's experience and background in the paper business, pointing out that his qualifications include not only a valuable knowledge of the business, but in addition a wide acquaintance throughout the printing and paper trade.

TIM O'KEEFE GETS TWINS

Tim F. O'Keefe of the Sierra Paper Co., Los Angeles, became the proud parents of twins, a boy and a girl, on September 5. Friends claim he should have passed out two cigars to each, instead of one, but Tim maintained the overhead was high enough already. The twins had not been named at the time of writing. This arrival makes a total of three children in the younger O'Keefe family, the first one being a girl.

BOB TOWN TO ENTER PAPER BUSINESS

Robert Town, son of R. B. Town of the Buel-Town Paper Co., San Diego, will graduate from Stanford University this fall, and will follow his father's lead in the paper business. Last summer he went out on the road pinch hitting for one of the salesmen, and made a very creditable showing, which augurs well for his future in the business.

CLARK TAKES SIERRA TRIP

R. C. Clark—otherwise known as "Budge"—general sales manager for the Zellerbach Paper Co. in Los Angeles, put in a delightful vacation last month in the high Sierras, which included a visit to Yosemite and a bit of fishing in the mountain streams.

L. A. PAPER TRADE HOPES FOR STABILIZATION

The paper trade in Los Angeles and surrounding Southern California territory, is moving steadily toward more stabilized price conditions, after a long period of unsettled market conditions.

Los Angeles has always been one of the weak spots on the Coast, as far as prices have been concerned, and the working out of this problem will do much to relieve the situation in this territory.

A method of control has just been adopted which, if carried out thoroughly, should end many of the difficulties formerly encountered in efforts toward stabilization. Penalties for violation of the trade practice rules have been agreed upon, with the backing of the code authority, which will make it expensive for recalcitrant companies.

If the new procedure works out as well as expected, the market will likely be strengthened enough to permit jobbers to do business on a profit basis.

W. F. Bromley, vice-president of the Hammermill Paper Co. of Erie, Pa., was on the coast this summer with his wife and spent considerable time at the firm's mill at Hoquiam.

GUS JOHNSON BACK IN THE GAME

August Johnson, well known paper man who formerly represented the Everett Pulp & Paper Co., has opened offices in the Welch building, rooms 300 and 301, at 244 California St., San Francisco.

He recently returned from an eastern trip, and it is understood he now represents the following companies, among others, for the entire Coast territory west of Denver: Fitchburg Paper Co. of Fitchburg, Mass., makers of uncoated book and label paper; Champion-International Paper Co. of Lawrence, Mass., manufacturers of high grade coated book and coated specialties; New York & Pennsylvania Paper Co., imitation press boards and specialties; United States Envelope Co., Kellogg Division, school supplies, tablets, composition books and commercial stationery.

DUNN RECOVERS

H. Arthur Dunn, San Francisco, secretary of the Pacific States Paper Trade Association, has returned to his office after a serious illness.



A. H. HOOKER, JR., RECOVERING FROM ACCIDENT

Albert H. Hooker, Jr., sales manager of the Hooker Electrochemical Company in Tacoma, is receiving his many friends at home these days while he recovers from an unfortunate accident which occurred August 18th while he was attending the Reserve Officers Training Camp at Monterey with the 302nd chemical warfare regiment.

Al missed the TAPPI convention because an old-time cavalry horse got the best of him. The wily horse apparently determined to find out by frantically bucking, whether Al was a cavalry officer or a major in the chemical warfare service. They discovered they couldn't get along together, and Al went to the hospital with several torn ligaments remaining for a month before returning to Tacoma to further recuperate.

While still in the hospital the TAPPI convention convened and Al wired that he had an unusual alibi for not being present as he would like to be, the reason being that he had tried to impersonate a cavalry trooper but had failed miserably in fooling the horse. His telegram was read at the Wednesday luncheon and TAPPI president, Clark Heritage, said that everybody was sorry Al wasn't present to enjoy the successful convention, and all wished him a speedy recovery.

S. G. Wilson of the Pacific Coast Paper Mills has moved his Los Angeles office from the Bradbury Building to 1342 Produce St., where they now have their own warehouse space and carry their complete line in stock.

POWELL RIVER BUILDS DAM

Powell River Company is now engaged in a \$175,000 project to control the flow of water into the Gordon Pasha watershed, source of most of the newsprint mills' water-power.

Preliminary work on the rock-filled crib dam on Horseshoe Lake, which has been in progress several weeks, is now completed and actual construction of the foundation has been commenced, according to Stuart Cameron Construction Company, contractors for the job. The dam will be ready in six months before the run of the spring freshets.

When completed the dam will be 750 feet long and 40 feet high. Forty men are now working on the project.

This construction program is entirely separate from the Powell River Company's mill improvement which in itself will cost several hundred thousand dollars.

PULP ENGINEERS TAKE TO AIR

In a checkup to see if they had missed any part of the Olympic Peninsula on their frequent camping trips, Bob Pollock and John Kiely of the Rainier Pulp & Paper Co., recently took a two and a half-hour airplane trip over the rugged Olympic Range. Kiely recorded the speedy jaunt by taking moving pictures as the plane skimmed the mountain tops.

Andrew Christ, Jr., president of the Western Waxed Paper Company, recently spent some time at the Portland, Oregon, plant. Mr. Christ makes his home at Oakland.

BILL MCGINNIS' FATHER DIES

James McGinnis of Appleton, father of William McGinnis of the Pacific Coast Supply Company in Portland, died at his home late in August.

Mr. McGinnis was well known in the paper industry of Wisconsin as he had been connected with the production of paper all his life and for many years was general superintendent of the Patten Paper Company, retiring in 1926. His association with the Patten company lasted thirty-six years.

A large delegation of employees from the Patten Paper Company, together with many prominent executives of the industry in Wisconsin, attended the funeral. Bill McGinnis flew East to see his father during his last illness.

Technical Association of the Pulp and Paper Industry

122 EAST 42ND STREET
NEW YORK, N. Y.

Pacific Section

Pacific Pulp & Paper Industry.
Seattle, Washington.

Attention: Mr. Harlan Scott, Editor.

Dear Mr. Scott:

I wish to thank you and your associates for the interest you have shown, and the aid you have given me in the past few months in the planning of the program of the TAPPI convention. Your publication certainly has done great work in inducing attendance, and giving this section of the country publicity.

I also wish to thank you for the loan of the many cuts of pulp and paper mills of the West Coast which we used in our official program

With best regards I remain,

Very truly yours,

Signed: H. ROBERT HEUER,
Convention Chairman.

PAPER IMPORT COMMITTEE WATCHFUL

An extended investigation by representatives of the Import Committee of the American Paper Industry of importations of dutiable printing papers from Canada indicates that customs officials are now exercising the greatest care to prevent the admittance of such papers improperly as duty free standard newsprint. All paper in recognized poster shades is being classified for duty whether in sheets or rolls, and colored newsprint of newsprint quality is classified for duty when imported in sheets; such paper imported in jumbo rolls is admitted only upon issuance of bonds to cover a dumping duty. Canary news is classified for duty in either sheet or roll form. Importers have tried to secure free admission of all such papers as standard newsprint, but data, provided by the Import Committee assisted customs officials in determining the proper classification.

As the result of representations by the Import Committee, Treasury Department officials have called for an investigation in Japan of the situation involving paper napkins which are being offered at exceedingly low prices.

Large quantities of screening board imported from Canada are under investigation to determine the proper classification. Fifteen carloads imported at Milwaukee are claimed by the importer to be dutiable at 20 per cent as test container board, and not dutiable as paper board, on which, owing to Canadian regulations, the duty would be 39 per cent. The same problem is involved in fifteen shipments at Sault Ste. Marie. Paper board imported at Cleveland and Buffalo is being classified for duty as vat lined board, at 30 per cent, and not admitted at the 10 per cent rate for unprocessed paper-board.

Importers have abandoned cases which they had protested to the customs court, in which they had claimed lower rates of duty when those levied on overlay paper, embossed fibre board, drawing board, and lampshade board.

AUGUST NEWSPRINT IMPORTS

Imports of newsprint for the month of August, 1934, reached 171,389 tons, having a value of \$5,954,533. Of this total Canada supplied 153,034 tons with a value of \$5,404,284. Newfoundland came next as a supplier of newsprint for American newspapers, furnishing 6,404 tons, having a value of \$215,423.

Sweden's shipments of newsprint to this country during August amounted to 6,158 tons with a value of \$176,017.

Finland shipped us 4,263 tons, worth \$110,937.

Germany sent over 277 tons with a value of \$7,814.

The Pacific Coast, including Hawaii, received in August some 11,225 tons of foreign newsprint worth \$354,623. Imports by Pacific Coast customs districts follow:

August Pacific Coast Newsprint Imports

Customs District	Tons	Value
San Diego	465	\$ 12,615
Los Angeles	2,327	72,029
San Francisco	4,686	151,956
Washington	3,560	110,621
Hawaii	187	7,302
Total	11,225	\$354,623

August Pacific Coast newsprint imports increased over those of May which were 9,107, having a total value of \$302,346.

UNTIE your MILL



SUPERINTENDENT'S hands!

CUT COSTS! Cut Costs! the order of the day. With wages up . . . hours down . . . how? Not with obsolete equipment whose annual cost of operation has been increased steadily. For obsolescence ties your superintendent's hands . . . prevents him from reducing those high production costs that represent the difference between red and black on your ledgers.

Let him start in the beater room with a new Jones Multibeater. It will do more work at less cost than your other beaters by faster and better beating with less power. It is a handy and flexible unit which will allow you control over a wide range of papers using the same tackle.

You will be agreeably surprised to see its fast circulation allowing no lodgments and mixing quickly. It dumps fast and clean without raking. It is ruggedly designed and constructed but operates with featherlike control maintaining settings to thousandths of an inch, which accounts for its 60% increase in efficiency over regular beaters. Maintenance is low and man hours are reduced considerably, particularly if you are interested in our automatic beating control.

If you are interested in reducing beater room operating costs — and what mill executive isn't? — why not let us give you complete facts as to how the Multibeater will cut costs and pay for itself in a short period? Your inquiry will imply no obligation.

Pacific Coast Supply Co.

Seattle—Portland—San Francisco

Exclusive Pacific Coast Representative for the entire line of paper mill products made by

Jones

A name that has won a world-wide reputation through 75 years devoted to paper-making progress

DERMATITIS—CAUSE AND REMEDY

By Dr. L. H. Frechtling

The Champion Coated Paper Co.

One of our correspondents wants to know what can be done to prevent the dermatitis which is so often found with machine room workers. It has been variously named in different communities. Some call it "to rot" others "water rot". Your own men have an entirely different name for it, but the cause and the results are always the same.

The condition is a true dermatitis, inflammation of the skin—resulting from the feet being damp or wet over a considerable period of time. This moisture softens the outer horny protective layer of the skin, and makes it a comparative easy barrier for infection to pass. This often happens, making it red and inflamed, hot to touch and painful, localized swelling goes on to the formation of pus in the deeper tissues of the feet. Most often the site of infection is between the fourth and fifth toes.

Now for a preventative treatment—Workers who are employed at jobs where their feet are likely to get wet should carefully bathe and dry their feet following the completion of each shift. Following the drying of the feet, especially between the toes, dust them lightly with talcum powder, zinc stearate, Fuller's earth or even corn starch. The idea being to absorb the remaining moisture.

Shoes should be worn as a safety measure regardless of how much dampness may exist. In case where localized infection as described above occurs, the case should be referred to a capable surgeon as the dangers not only to limb, but to life itself, are great.

Proper drainage about the machine and in the pits will do much to lessen the dangers of this form of dermatitis of the feet.

GROUNDING PORTABLE ELECTRIC TOOLS

Ben Rogers of Bird & Son writes the National Safety Council that there is a difference of opinion on the conclusion reached by the Electric Light and Power Group of the Massachusetts Safety Council in reference to grounding portable electric tools. The entire situation reverts to Section 906, pages 134 and 135, of the National Electric Code which covers the case.

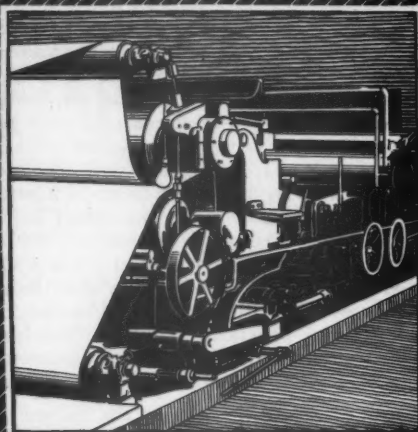
Bird & Son realize the importance of grounding portable equipment and have decided on a program which when carried out will make it safe to use portable tools. It is proposed to start by protecting portables used in steam boilers, at the wet-ends of paper machines, and on printing presses.

Plugs and receptacles, equipped with one lead to ground, shall be installed. In co-operation with builders of this type of equipment, a non-breakable plug of light-weight construction, yet possessing high tensile strength, has been developed, which meets with the approval of the National Board of Fire Underwriters.

A NEW GENERAL ELECTRIC THRUSTOR

A number of improvements in the G-E Thrustor, a self-contained combination of motor-driven centrifugal pump, oil chamber, and piston that produces a smooth straight-line thrust through a definite length of stroke especially suitable for the operation of clutches, brakes, valves, doors, etc., have been announced by the General Electric Company.

The new line of Thrustors consists of a complete range of standard models providing 10 combinations of thrust and stroke ratings varying from 50 to 3200 pounds thrust and from 2 to 16 inches stroke.

**Two Kernels In This Nut**

Certainly Orr weaves fine felts but so do Orr's competitors. Paper mill felts have to be good or they are no good.

Rather than emphasize quality, Orr would stress the importance of adopting the felt that will best meet the need—and there is such a felt.

Avoid the felt that is just about right. Consult your Orr representative and between the two of you, settle on the felt that is exactly right.

That is one of the kernels in the nut. The other is the precautions you take lest your felts be injured on the machine or during washups.

An Orr representative would be glad to call; or write to the

**ORR FELT and
BLANKET COMPANY**
PIQUA, OHIO

Pacific Coast Representative: GEO. S. MEDDIS
1650 No. Point St., San Francisco, Calif.

**ORR
FELTS**